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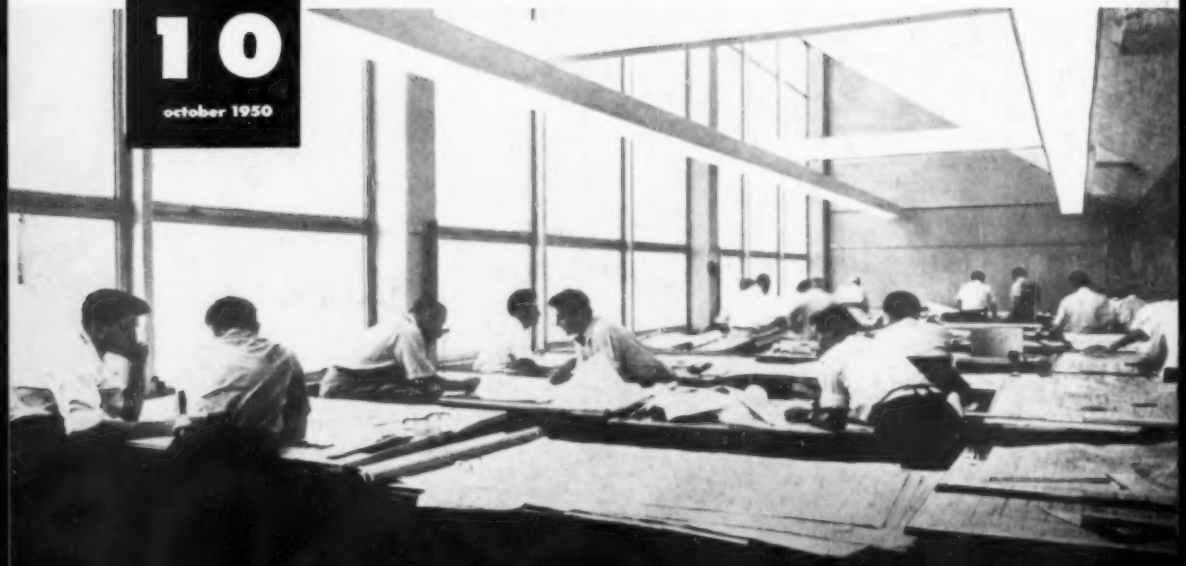

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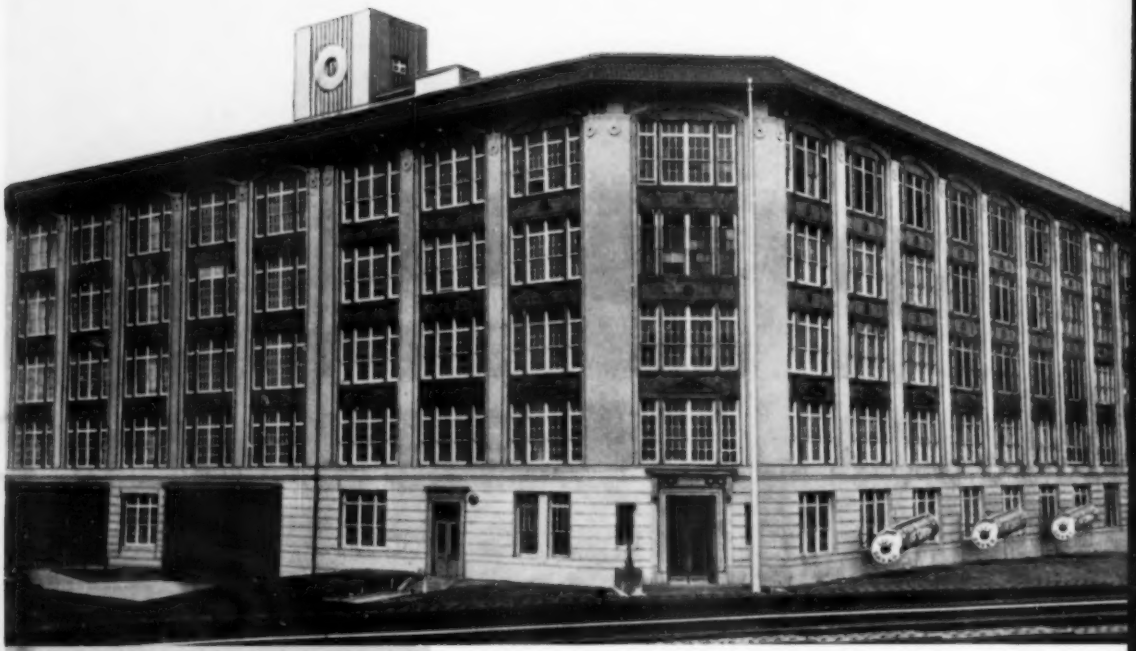
PROGRESSIVE ARCHITECTURE



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PROGRESSIVE ARCHITECTURE

newsletter

OCTOBER 1950

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- As this issue of P/A goes to press, the editors have completed a round-up survey of present conditions as they affect the architect. After many conversations and interviews, on the record and off the record, after analysis of available figures and statistics and estimates, we are ready to draw some conclusions and make some forecasts. Predictions must be tentative, because future events in construction will be determined as in other aspects of industry by the course of military events and the sequence of political moves, neither of which can be clearly foreseen, even by those who will make the final decisions. However, here is the present situation: Through the remainder of 1950 and through 1951, building business will go ahead very much as usual, even continuing in boom proportions. Realization that Russia's strategy is to disrupt our economy will prevent that from happening for as long as possible. As war material needs multiply, they can be satisfied for a time along with production for normal activities in construction, automotive and other fields; when and if that is no longer possible, attempts will be made to apportion drain on requirements to these other fields.

- At present, a comparatively small withdrawal of basic construction materials is foreseen. Greatest demand for defense purposes is in obvious items: steel, aluminum, copper, nickel. Estimates of defense needs vary from 2% to 6% of present production of these materials. This should not disrupt usual civil construction.

- In steel, where construction usually accounts for only 14% of total consumption, a 5% to 6% use of production by defense establishment might be serious. During first half of 1950, construction accounted for lower than normal proportion of total use, losing somewhat to automobile manufacture.

- In aluminum, shortages for normal building purposes will probably persist. Same is true of copper. It is impossible to get accurate estimates of volumes that may be used for defense, but those in a position to make informed guesses believe aluminum and copper will be hard to get in early '51. Local shortages of cement can be attributed mostly to strikes and other spotty production difficulties that are being cleared up. Production estimate of 212 million bbls., if true, should provide enough materials for all foreseeable uses, and flow to jobs should be steady and even in a few months. Difficulties in concrete construction will be with reinforcing bars rather than concrete.

- Lumber has also been in short supply in certain localities recently. The foremost reason has been transportation difficulties. Total lumber production this year will be about 40 billion bd. ft., of which some 27 billion will be used for construction. Guesses are that up to 4 billion feet will be directed to defense in next year. This could mean continuing spotty shortages, but should not imply a really serious shortage for building.

(Continued on page 2)

newsletter

- Brick shortages, common across country, have nothing to do with war situation. Unprecedented volume of demand has simply outstripped production, although that has been high and will probably reach 6 billion brick for the year. In the past, the industry has produced 10 billion, and can again if the demand continues.

- Other materials which are causing local complaints of shortages are gypsum board and lath products -- which during the year became unexpectedly popular -- and builder's hardware, which, of course, is affected by the metals situation. Hardwood flooring has been short, but that situation will definitely improve.

- To sum up, there does not seem to be any real need for government allocation on a priority control system at the present time, except perhaps in a few of the basic construction metals. Yet controls have been authorized and are being organized, and it is widely assumed that they will be used after fall elections -- and for one reason: price rises.

- In recent weeks a number of additional building materials have risen in price. Most important was cement rise of 10¢ a bbl. on the part of some companies. Others will follow, giving as their reason increased labor costs resulting from strike adjustments. Far-sighted manufacturers are trying to hold costs down, because they know that general rises can be an excuse for government "stabilization."

- Discussion has been rife as to whether defense establishment or Commerce Dept., or a new agency would handle controls on construction, if and when. Now that the President has created an Economic Stabilization Agency to carry out powers allowed under law he signed early in September, that question is answered. Price and wage controls are all that is contemplated at present. There is no indication that any specific type of civilian building activity will be curtailed or controlled in any way except possibly through regulation of financing. Mortgage restrictions on home building up to present seem to have resulted in no slowing up of activity except in dangerously over-financed category, where many were happy to see loans somewhat tightened. Estimates of 1 million housing starts in 1951, against almost 1-1/3 million this year, are common. This would still be boom activity.

- Rumors of restrictions of government sponsored construction projects through budgetary cuts are not borne out by the facts up to this point. A quick survey of housing, public building, urban redevelopment, hospital construction programs and agencies discovers business as usual and business planned as usual there also.

- In summary, at the risk of being overly optimistic, P/A Editors see no cause for alarm about the state of architecture and building in the year ahead. Another Pearl Harbor could, of course, shatter all predictions as well as all hopes, but at present, even with continuing war situation, the remainder of 1950 and the first half of 1951 promise: generally adequate flow of materials, except steel, aluminum, copper; perhaps price regulations on building materials, perhaps further credit restrictions on mortgages, otherwise no attempt to curtail private building; continuation of federally sponsored planning and building programs; more public works than in the recent past; more civil defense projects for the armed services.

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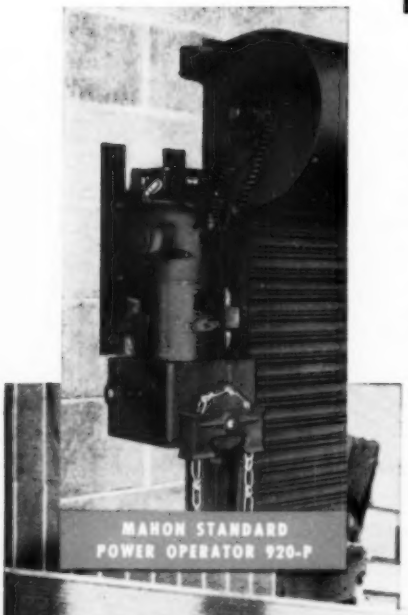

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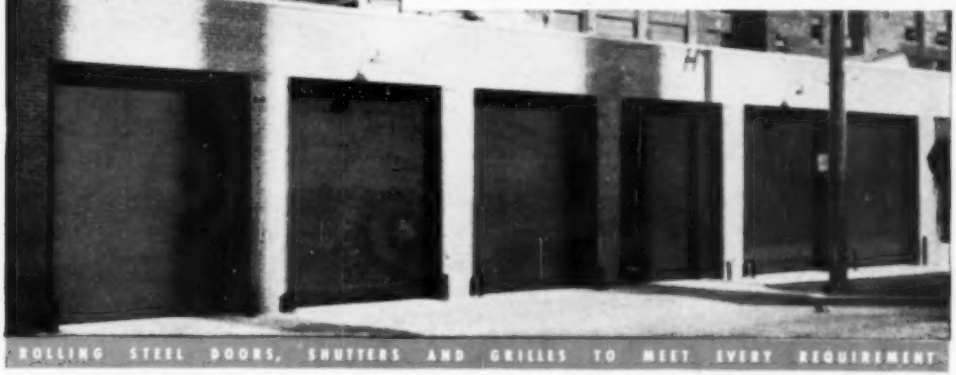

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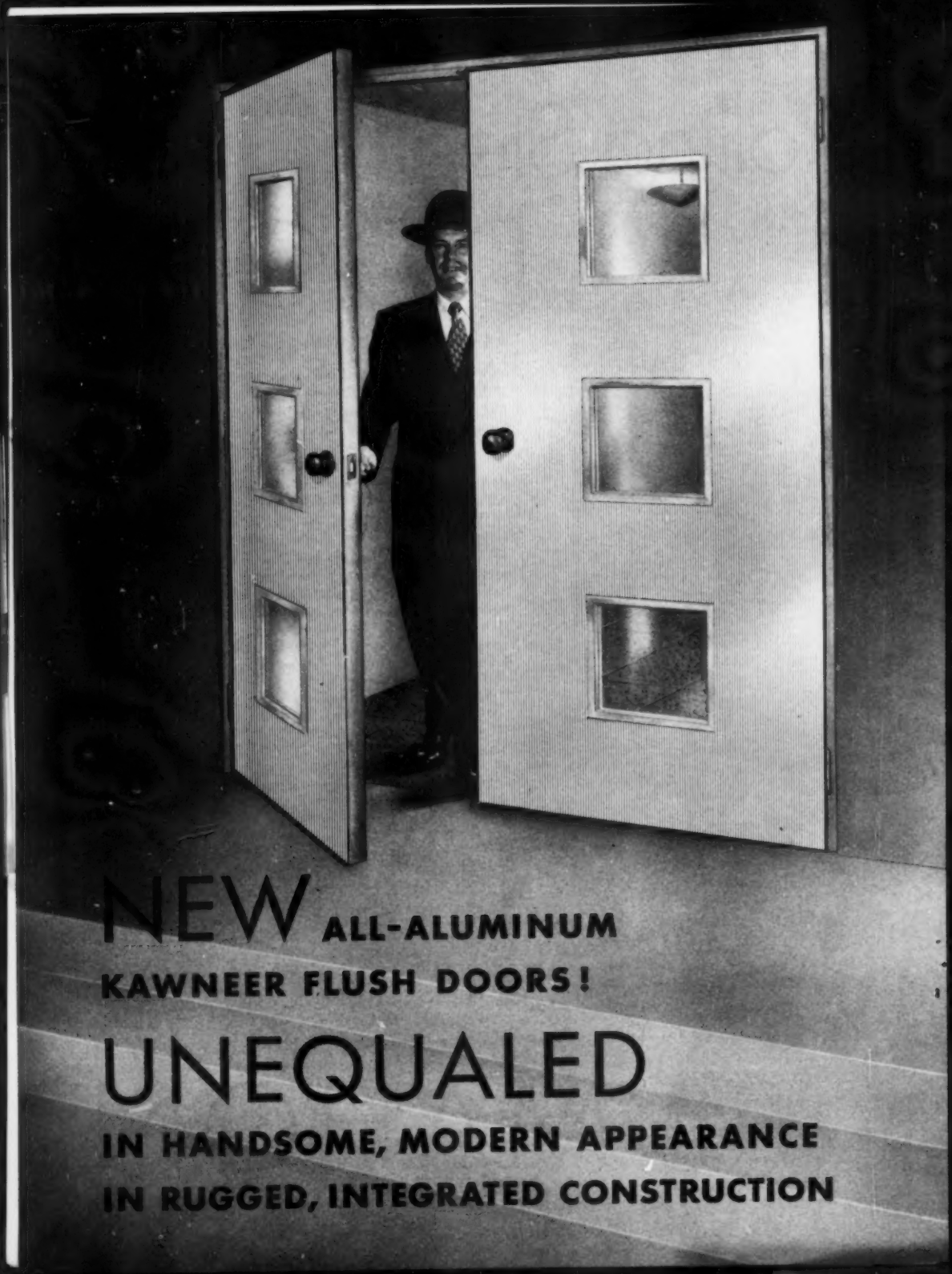
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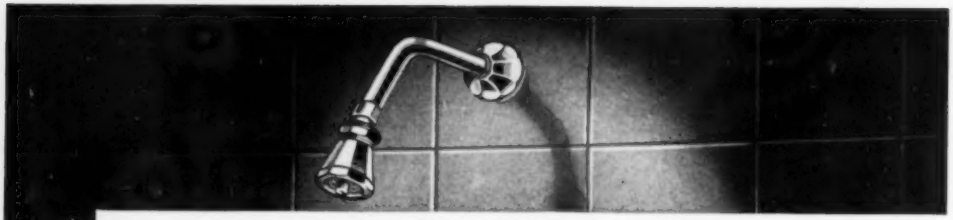

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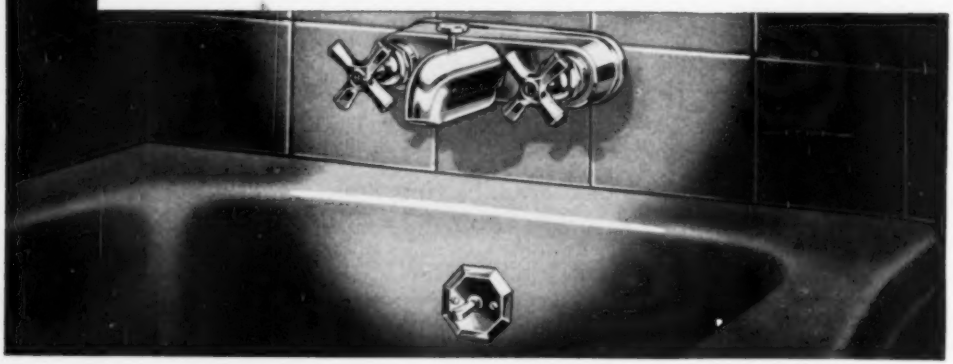

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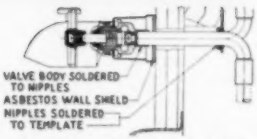

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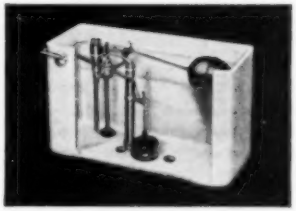
EMPEROR VITREOUS CHINA FLUSH VALVE CLOSETS—*For 10-in. roughing-in.* Syphon jet bowl with 1½-in. top spud. B-6512 (illustrated) has elongated front bowl. Also available with round front bowl.

PRINCE VITREOUS CHINA CLOSETS—*For 12-in. roughing-in.* Round front extended shelf bowl. Reverse trap close-coupled combination, free-standing model. B-6420 (illustrated).



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6

p/a VIEWS

LIVELY AND INFORMED

Dear Editor: As a participant in the first round-robin critique, I looked upon this device as one which might permit a more searching type of criticism than the magazine quite understandably is prepared to offer in the usual unsigned story. I was a little disappointed that the analysis and criticism had not been more vigorous in this instance.

After closely studying the August issue, I withdraw any earlier reservations. The method has produced a lively and well informed criticism. It is particularly interesting to examine the reasoning of the architect as it appears in his explanations and rebuttals and to gain an insight into his approach to a design problem. The quality of the architects represented and of their work is high. The lack of comparability between the projects works no hardship, since as in previous cases each building is considered on its own merits as a specific solution to a specific problem, and as a work of art.

I hope you will have more round-robin critiques in the future and that I will have an opportunity to participate again.

HUSON JACKSON
New York, N. Y.

SAFETY FOR WHOM?

Dear Editor: May I, as a new subscriber of your excellent magazine, express a thought or two? I am struck by what seems to me an emphatic inconsistency in this business of planning and erecting buildings.

Why must the architect, who co-ordinates a thousand ideas and produces the working drawings, be registered in the state in which he works, while the contractor who actually builds the building and who, as a result, is far more responsible for the finished product, has no one looking down his neck other than the building inspector whose visits are apt to be desultory to say the least?

And why must a building inspector possess no other qualification (in many instances) than being a good friend of the mayor?

These thoughts are impressive to me in view of the fact that the overwhelming majority of buildings constructed in these United States are erected without the guiding hand of an architect. I am speaking particularly of the thousands of small towns and communities which—if they have building codes—enforce them with token effort or not at all.

My answer would be that it's a good thing for "public health and safety" that we have men in the contracting and building business who are experts in their field and who are competent enough on their own to carry a project through from design to construction. If in the future, regulatory action reaches the point where all building construction must be planned and supervised by registered architects, where will such personnel come from? Particularly with only 16,000 such people in the country.

Perhaps the Commission now studying Architectural Education and registration has the answer. It seems to the writer that there might well be *two* classifications of architects—men qualified to work with residential and light commercial construction and others to work with larger, more pretentious buildings, the engineering scope of which would perhaps never in a lifetime fall to the average practitioner. State boards could present their examinations accordingly, consideration being given experience and technical knowledge commensurate with the type of license.

The writer is neither a registered architect nor an architectural school graduate. Such knowledge as I have of the art is the result of intense interest and years of home-study together with the design of many buildings, the execution of working drawings, and the supervision of construction. There is little likelihood that I will ever be registered since in this state it is necessary to have worked under the supervision of a registered architect.

There must, however, be many others like myself who are qualified by years of practical experience, and who could be licensed in a "restricted" category for certain classes of work. Or is there a feeling in the profession—such as there seems to be in the American Medical Association—that an oversupply might prove nonprofitable for all concerned?

CORMAC C. THOMPSON
Prosser, Wash.

CREDIT TO ALL

Dear Editor: My thoughts about PROGRESSIVE ARCHITECTURE can be summed up in this way. Since many professional talents must be used together to produce functional buildings with proper environments, all contributions should be given credit in the data published. Especially should more information be given in regard to the site planning problems involved in any specific design.

The professional landscape architect is an active collaborator today and should be so recognized. In cases where the site planning is done by others, they should receive full credit.

Your magazine has developed to be a strong source in the field of design and this is indeed encouraging to those of us both teaching and practicing professionally.

MILTON BARON, Assistant Professor
Assistant Campus Landscape Architect
Michigan State College
East Lansing, Michigan

WITH PROPER RESPECT

Dear Editor: A few months past my subscription lapsed due to oversight. At that time you wrote asking if the lapse was due to disagreement with your editorial policy. As it wasn't, I did not answer. However, after reading your last issue, I would like to bother you with a few impressions.

I do not expect a magazine to agree with me and publish only to my taste. However, it should present material that stimulates, and this material should be presented in a thorough manner. It should not leave the poor reader hanging in mid-air. Your presentation of the hotel at Fort Fairfield, Maine, baffles me. The details and photos illustrate design that is commonplace.

The plan poses the following enigmas:

1. The stair is not visible from the desk.
2. The banquet hall between the dining room and the kitchen.
3. The traffic pattern in the kitchen.
4. The banquet storage in the dining room.
5. The barber shop adjacent to the lounge.
6. How do help and supplies get upstairs without passing through dining room and lobby?
7. The elevator which opens into the lobby on the first floor and into a janitor's closet above.
8. The problems in control due to the arrangement of the coffee shop, and dining room and their entrances.
9. What happens to the rear stair at the first floor?
10. The boiler room on the street.
11. The location of the private dining room.
12. The unfortunate location of the front stairway.

(Continued on page 12)

p/a VIEWS

(Continued from page 11)

Please recognize that a hotel is one of the most difficult and complex of architectural problems and that a serious architectural journal should treat it thoroughly and with proper respect or not at all.

Impression #2. House at Fresno, California. This sort of thing has been done so much, published so much and so much better.

Impression #3. "How to Choose a Comfort Cooling System." Materials and Methods, Selected Details. Very good!

Impression #4. Theater in New York. Just enough information to make me curious.

Your magazine has furnished many hours of entertainment and education and I have no intention of dropping my subscription. But it could furnish much more to the architect by a thorough analysis of fewer jobs.

THOMAS F. HARGIS, JR.
Architect
Miller Building
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letters to the schoolmaster

Readers of "Out of School," the P/A column conducted by Carl Feiss, raise some questions provocative of further discussion.

SPEAKING OF THE CLIENT

Dear Carl: I address you in this brash familiar manner because we are friends and soulmates. Your column in P/A is a bright jewel not just because you are so right about everything—but also because you say it so well. Your message to the June graduate should be put in booklet form and issued to every embryo architect in the country for years to come. It's got soul, kid, soul!

No, I'm not an architect. There is yet another part of humanity who reads the architectural magazines. The architect's wife. She has as personal and as professional an interest in her husband's work as the man himself. Perhaps, like me, she does the office secretarial work at home. And types the specifications. Sends out the bills and prays to God (Frank Lloyd Wright, of course) the clients will pay up one of these days.

This town that we live in is a strange place. Oh, maybe it's not any stranger than North Cupcake, Idaho—or Old Woodbridge, Maine, but it's strange anyway. The architect who had the field all to himself for many years is dead—and there are two who haven't been here long. Only two in a town who are licensed. We came a year ago, and the other man beat us by a year. It's a fertile field—or will be when people find out what an architect is. Education is so large a part of one's practice, here at least where the lumberyards have free plan service and are used to having most of the business—not just for the houses, but for *everything*. (We're busy joining clubs, meeting people, and explaining in answer to the question, "Are you the ones who have the blueprints for sale?")

What I want to know is this: How does one deal with clients? Do human beings automatically resign from the human race as soon as they become clients? Here's one: He has connections with a well-known magazine and wants a simple house of two rooms (open planning, hurray, we thought). If the architect will do the house for a small fee (a certain flat rate so meager my

(Continued on page 14)

Crawford

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p/a VIEWS

(Continued from page 12)

fingers refuse to touch the numbers on the typewriter) he will see that the house receives publicity in the magazine. So he's bought and sold three or four lots (getting a couple of preliminaries for a house on each lot, of course). Vetoed this and vetoed that. Taken up six months with it. Now he wants a dutch door and a copper hood fireplace—something that can discourage a man, when he's pretty damned sure he'd be ashamed to have this house, the way it'll eventually be, in any magazine. What the hell to do?

Then there are the ones fired with enthusiasm who borrow all your books and magazines, then go down to the lumberyard and get a free plan. And those who call you up five times on Saturday night, at 8 Sunday morning, and talk to you in the office till 6:15 at night, finally leave, only to call your house before you've had a chance to get your shoes off.

And the one who's raging mad at you one minute, and telling everyone in town you're a genius the next; who picks his own contractor, decides he hates him later and you have your neck in a noose trying to placate both of them. And the ones who call you up and say, "Your check is here, come and get it," instead of putting it in the mail. Then they call you up and want you to come out and look at the job and you do. They don't give you the check while you're there. They wait for you to ask for it. And if you don't that's tough, they intend to wait till you come crawling on your draftsman's elbow after it.

I think architects would like to have some advice on this subject in your column. The client must be a problem in all the small offices—especially when you haven't had your practice long.

ARCHITECT'S WIFE

•

Your anything but platonic letter of June 15 was received with delight and at the same time sympathy. I only wish that I had more female correspondents and as many as sympathetic.

I am asking our editors to publish the letter without your name and location, as requested, and perhaps what you have to say will engender more heartfelt expressions of personal problems than heretofore.

I just want to say this, without coming up with any solution to all the questions you raise. I believe the universities have made a mistake in encouraging the fledgling architect to thinking that he or she or they can start successfully with small house work. Small house work, as you indicated, has many headaches and involves overhead many times greater than a beginning office can handle. I know of several instances where the young architectural firm beginning in a small city has hung out its shingle as commercial and non-residential architects, and made a very real "go" of it in handling store remodeling, small public buildings, church and institutional work and has resisted any demands for small home design until such time as it has achieved a status in the community through its relationship with the business rather than the domestic side of its work.

As far as handling your own business and getting your checks paid as they should be, my only advice is to bill your client at the office. If he does not come through at the proper period, send him another bill and keep it on a strictly business basis. If you feel it necessary, enclose a return envelop with your bill, but make certain that the deal is on a normal businesslike basis. Don't crawl for it.

Sorry I cannot be more chipper about clients, but nobody has yet solved the cussedness of human beings. Keep your chin up. C.F.

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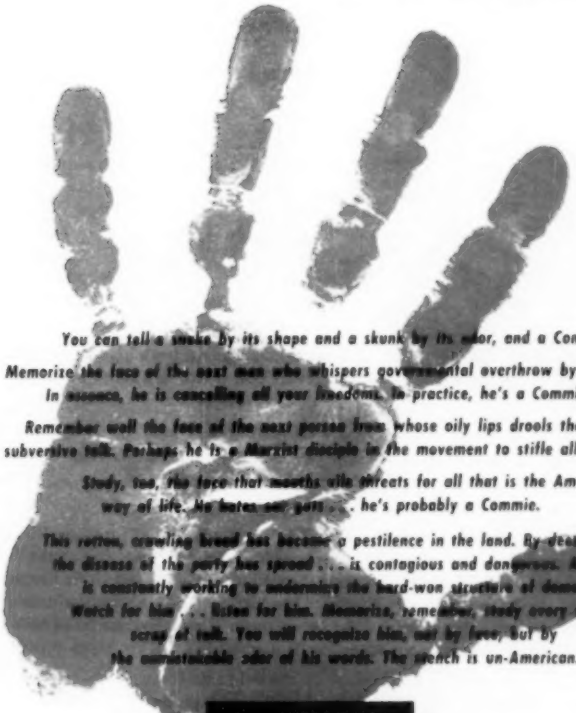
how to recognize a COMMIE!



You can tell a snake by its shape and a skunk by its odor, and a Commie . . . well . . .

Memorize the face of the next man who whispers governmental overthrow by force. In essence, he is cancelling all your freedoms. In practice, he's a Commie.

Remember well the face of the next person from whose oily lips drools the slime of subversive talk. Perhaps he is a Marxist disciple in the movement to stifle all free enterprise.

Study, too, the face that mouths vile threats for all that is the American way of life. He hates our guts . . . he's probably a Commie.

This rotten, crawling breed has become a pestilence in the land. By deed and word the disease of the party has spread . . . is contagious and dangerous. A Commie is constantly working to undermine the hard-won structure of democracy. Watch for him . . . listen for him. Memorize, remember, study every suspicious scrap of talk. You will recognize him, not by face, but by the unmistakable odor of his words. The stench is un-American.

THIS MAN IS DANGEROUS!

You can't tell a Commie by his face, yet he is somebody's next door neighbor! Report any facts on un-American activities to your FBI.

it sure is GREAT to be an AMERICAN

FREE . . . a 2-color reprint of above message, "How to Recognize a Commie," (without advertising) and a car sticker, "It Sure Is Great To Be An American," gladly mailed upon request.

This is second in a series in the interest of democracy

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Vapor, a gas, flows through a wall, including plaster and asphalt, from high vapor density areas to low. Upon reaching a substance colder than its dew-point temperature, it condenses.

"Dew will not form on the walls and ceilings of a well-insulated house. But it may condense in the insulation in the walls or on the siding or sheathing. The insulation and wood then become damp. In time this dampness may cause the wood to rot, and the paint to peel off." U.S. booklet,* "Insulation and Weather-proofing," Page 11, Division of Farm Buildings and Rural Housing.

Multiple accordion aluminum is impervious to vapor and is non-condensation forming. Because of its slight mass, the aluminum sheet on the warm side quickly approximates the temperature of the contacting air; and never falls below the dew-point. Heat flow by inner as well as outer convection is blocked by the fiber and aluminum sheets. The air spaces practically eliminate conduction. The additional aluminum sheets reflect back 97% radiation on the warm side and emit only 3% on the cold side. Extraction of heat from the air by a contacting colder surface, which causes condensation, is negligible.

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This construction for walls is available commercially as INFRA INSULATION, TYPE 4 and TYPE 4 Jr. They cost under 7¢ a sq. ft., material with labor, in new construction between wood joists.

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PROGRESS REPORT

Elephant. Bronze by David Hare

Pyramid. Bronze by Mary Callery

Departure from stone masses to metal silhouettes and airy attenuations seems to characterize most of the sculpture selected by Museum of Modern Art for its new "Carvers, Modelers, Welders" exhibition just shown in New York and soon to travel across the country on an itinerary that includes galleries, colleges, art schools, and libraries. Jane Sabersky, assistant curator who prepared this exhibition, comments on this contemporary design expression as follows:

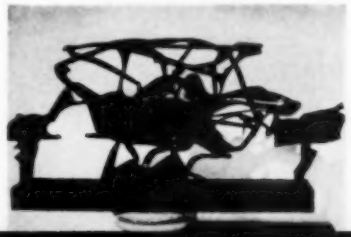
"Despite the variety of approaches, a certain skeletal aspect occurs in much recent American sculpture. Whether modeler or welder, these sculptors outline form rather than build it in the round. A variety of metals now are being welded together and often stretched into thin bands, creating the effect of drawings in space. Only the carver in wood or stone still builds his forms significantly in the round."

The techniques favored by the artists represented in this collection impart a floating, light quality that contrasts with the familiar traditional sculptural surfaces, made to catch highlights and lead the eye around forms. The welders, using industrial techniques, combine a variety of metals, create a variety of surfaces for the artistic effects. Light is accepted as an incidental factor by these workers in metals. Plastic and alabaster pieces also are included in the exhibition.

Billiard Player. Steel by David Smith

Photos: Courtesy Museum of Modern Art

Cloistral Landscape. Steel, bronze, stainless steel by David Smith



p/a

PROGRESS REPORT

(Continued from page 17)

Modelers in the show include: *Mary Callery*, American (1903), represented by two bronzes; *David Hare*, American (1917), who majored in analytical chemistry, worked for magazines, took up photography and in 1944 turned to sculpture. Represented by two bronzes; and *Milton E. Hebald*, American, represented by one bronze.

Carvers in the show include: *William King*, American (1925), who studied at University of Florida and Cooper Union, New York, first known through Museum of Modern Art "New Talent" show. Represented by one wood; *Harriet Moore*, American (1920), pupil of Moselio at Bennington College, studied

(Continued on page 20)

See how KEWAUNEE'S NEW ONE-PIECE LABORATORY SINK is more chemical resistant—huskier—offers more value!

Here's real news from Kewaunee—a *major* improvement in laboratory sink construction! It is a strong, one-piece sink made of Kewaunee's new Kemtherm.

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Modern Totem. Plastic by Leo Amino

Grief. Mahogany by Walter Midener

ANOTHER RUBEROID ROOF

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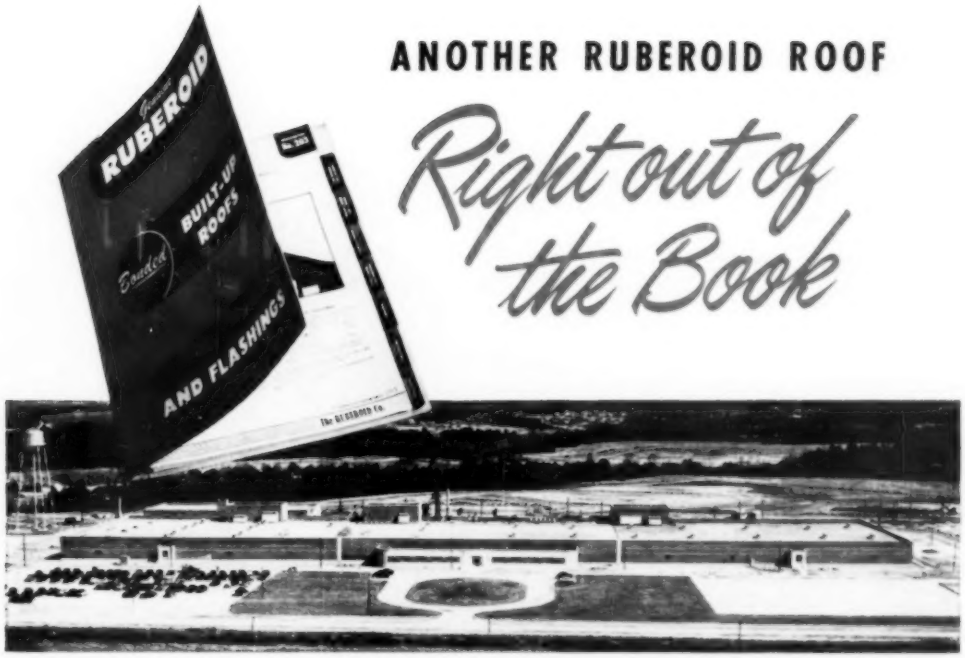

Harris Plant, Greenwood Mills, Greenwood, S. C.
Architects and Engineers: McPherson & Co., Greenwood, S. C.

Greenwood Mills' newest plant combines efficiency with beauty. Stretching long and low over this tree-fringed Carolina plain, its 210,000 sq. ft. of roof area demanded a roof that would stand up under the hot Southern sun without drying out and cracking . . . one that would apply easily and smoothly over this broad expanse . . . a roof that would be rot-proof and enduring.

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(Continued from page 18)

in Mexico, made window displays in New York. Represented by one alabaster, one plaster; *Walter Midener*, German (1912), head of sculpture department at Society of Arts & Crafts, Detroit. Represented by one wood; *Charles Salerno*, American (1916), contributor to "G. I. Sketchbook," teacher at New York's Washington Irving high school, represented by one stone sculpture; and *Charles Stevens*, American (1926), who studied at Columbia University and Newark State College. Represented by one stone sculpture.

Welders in the show include: *Theodore Rozak*, American, internationally known, represented by a brazed steel sculpture; and *David Smith*, American, represented by one bronze and one steel.

A special technique of plastic molding is employed by *Leo Amino*, Japanese, who studied in America. In his one piece shown, an abstract skeleton and wire screen are imbedded in the plastic.

Rooster. Bronze by David Hare

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MEYER KATZMAN and JOSEPH ROBERTO, Architects, have formed a partnership, specializing in store planning and design, 10 E. 52 St., New York, N. Y.

WILLIAM F. BIGONEY, JR., Architect, 1926 Sunrise Blvd., Ft. Lauderdale, Fla.

EDWARD W. SLATER & DANIEL CHAIT, Architects, 15 Park Ave., New York, N. Y.

WILLIAM K. DURYEA & E. HARTZELL ELKINS, Architects, 910½ Westheimer, Houston, Texas.

O. NAROVNA VALVANO, Architect, Turk Hill Rd., R.D. 1, Victor, N. Y.

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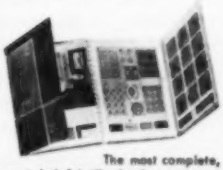

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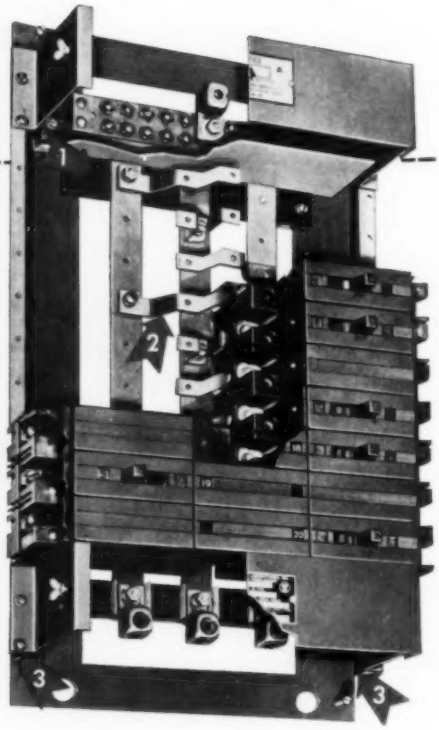
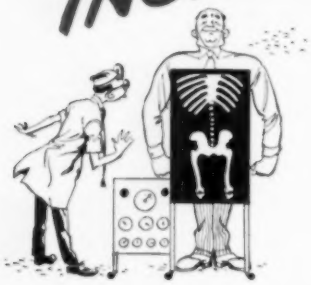


You've got to

LOOK INSIDE



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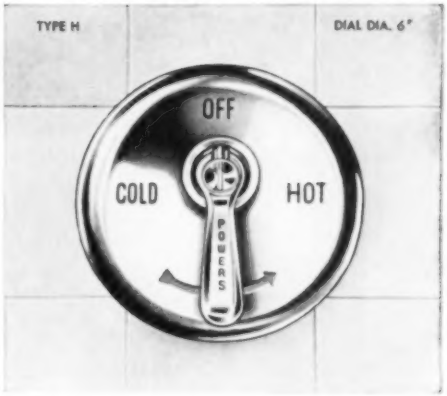

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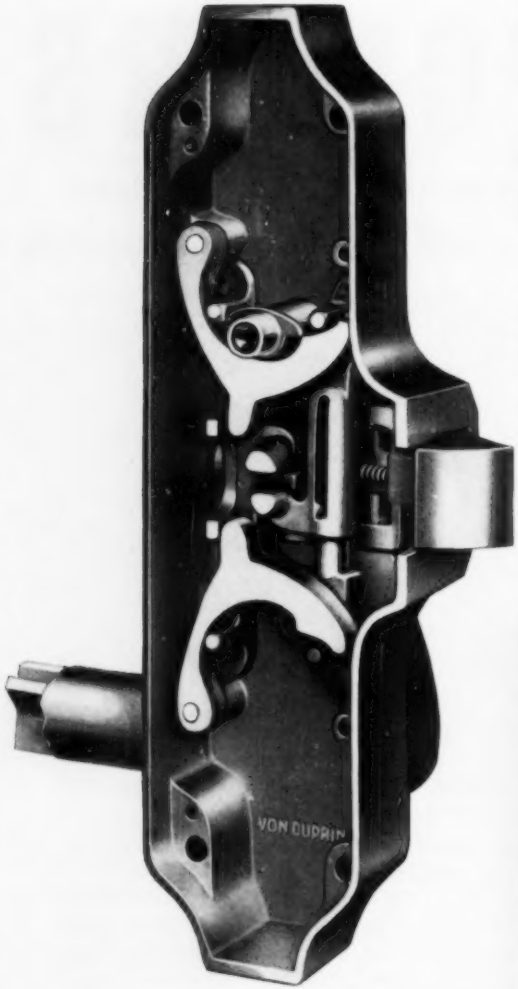

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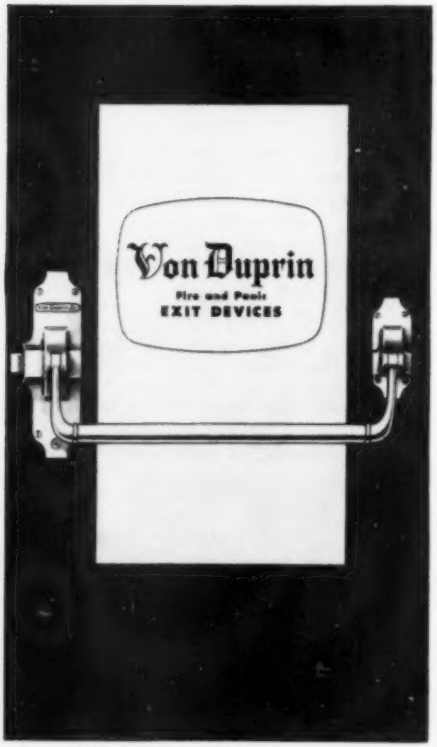

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But instead of having single panes, it is glazed with *Thermopane*® insulating glass. With this kind of window, home owners can enjoy the extra comfort and fuel savings of double glazing without all the expense and bother of storm sash. Their window insulation job is done, once-and-for-all, when the house is built.

That's a real plus-value you can build into houses—a value that helps sell houses—a value that keeps home owners satisfied for years to come.

Provide this modern kind of glazing, *Thermopane* double glazing, for every window of your houses. Remember, with *Thermopane*, there are no storm sash to buy, no expense for fitting them, painting them, hanging them.

Thermopane is made in more than 80 standard sizes, as well as special sizes, for use in all types of sash—double-hung, casement, picture windows and other styles—made of either wood or metal. Within certain size limitations, you can use *Thermopane* made of 1/8″ plate glass or double-strength window glass—the unit being only 1/2″ thick. Your L·O·F Distributor can furnish full information. Or write to Libbey·Owens·Ford. ®

THESE *THERMOPANE* BENEFITS APPEAL TO HOME OWNERS:

Opens and Closes just like a regular window. Easy to operate. Screens can be full length for ventilation from both top and bottom.

Cuts Window Washing in Half. Just two surfaces to wash—not four, as with storm sash. Hermetic seal keeps dirt from getting between panes.

Year-round Insulation. *Thermopane* windows keep rooms more comfortable, save on fuel bills, reduce frost and fogging. In summer, they help keep rooms cooler.

L·O·F GLASS

Thermopane

Made only by LIBBEY·OWENS·FORD GLASS COMPANY
4710S Nicholas Building, Toledo 3, Ohio

STOP RUST!

YOU can STOP RUST . . . PREVENT RUST...on *any* rustable metal surface with RUST-OLEUM. Every day, rust eats away on your metal tanks, buildings, fences, stairs...everything metal inside and outside your plant. Yet, rust *can* be stopped and protection given economically with RUST-OLEUM.

For more than a quarter of a century RUST-OLEUM has been *proved* under severe conditions of weather, fumes, salt air, salt spray, and other rust producing conditions. Railroads, shipyards, builders, refiners...nationally known users* in almost every field of industry...have found RUST-OLEUM the economical way to stop rust and prevent further rust. Architects, builders, engineers, maintenance men now specify RUST-OLEUM for primer, "shop coat", and finish coats.

RUST-OLEUM adds extra life to metal buildings, equipment and other metal surfaces and can be applied over already rusted surfaces without extensive surface preparation. Yet, RUST-OLEUM costs no more than most quality materials.

RUST-OLEUM not only protects — it beautifies as well! RUST-OLEUM is available in a large selection of colors including aluminum and white. It spreads evenly...and dries free of brushmarks in 4 to 12 hours, depending on conditions, to a tough, pliable film that protects against rust.

Be sure you get *only* genuine RUST-OLEUM for positive protection against rust! Specify RUST-OLEUM to your contractor or architect on any new construction, remodeling or maintenance work.

RUST-OLEUM is stocked and sold by leading industrial distributors in all principal cities of the United States and Canada. See Sweets for complete catalog and nearest source of supply, or write us direct for complete information.

*Names on request

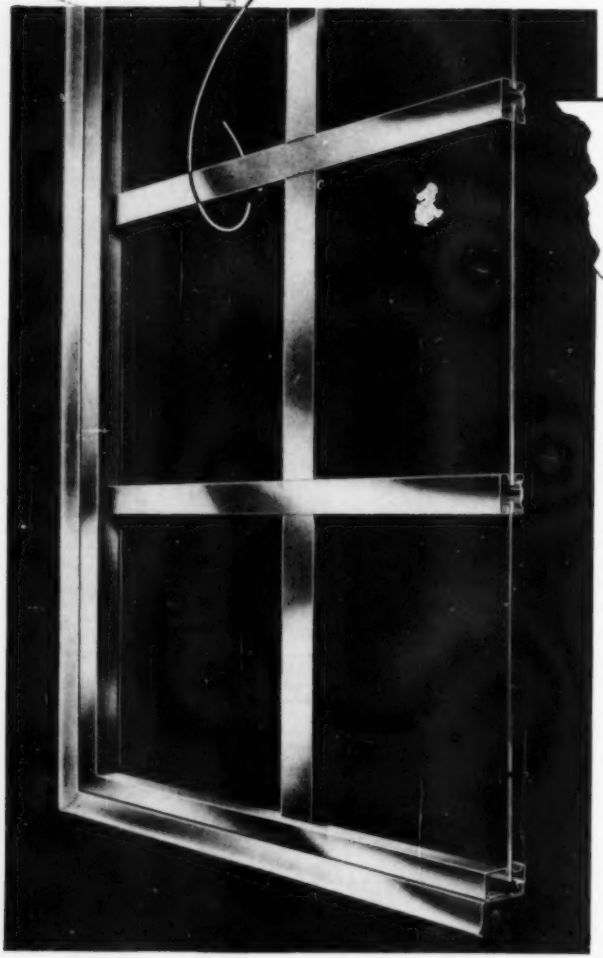
RUST-OLEUM CORPORATION

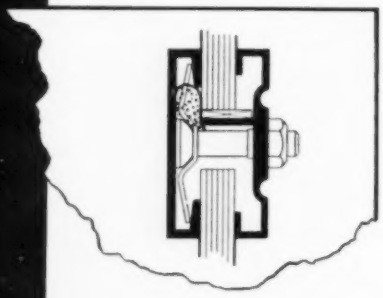
2524 OAKTON STREET EVANSTON, ILLINOIS

A NEW, LIGHT-DUTY

Muntin Bar

IN PITTCO STORE FRONT METAL





● This new Muntin Bar (No. 32) was designed in answer to numerous requests for a light-duty bar. It can be reinforced with all standard Pittco stiffeners, and may be used both horizontally and vertically. A concealed connecting strap fastens intersections securely. Because of its shallow profile, this Muntin Bar is ideal for the Colonial-type store front with its small rectangular lights, and in other installations where heavy supports are not required.

Muntin Bar No. 32 possesses the same rich, satin-smooth finish, sharp profile and rigid strength found in all other Pittco extrusions.

You can examine this bar and all the principal Pittco members in the Pittco Metal Sample Case, which our representative will gladly show you. See Sweets Architectural Catalog for the address of our nearest office.

PITTCO STORE FRONT METAL

PAINTS · GLASS · CHEMICALS · BRUSHES · PLASTICS

PITTSBURGH PLATE GLASS COMPANY

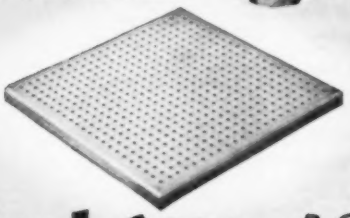
Another New Installation of Simpson Acoustical Tile

St. Paul Fire and Marine Insurance Company's Home Office

Typical of the growing list of sound control installations using Simpson Accoustical Tile is the home office of St. Paul Fire and Marine Insurance Company. In this large modern building, 1300 employees work more efficiently . . . are less tired after a day's work . . . because of Simpson Acoustical Tile on the ceilings and walls. The management of this progressive fire and marine insurance company realizes, as do thousands of other company officials, that sound conditioning pays off in better work, fewer errors, less labor turn-over and less absenteeism.

ONLY SIMPSON HAS ALL FIVE!

1. WASHABLE FINISH
2. HIGHER SOUND ABSORPTION
3. HOLLOKORE DRILLED PERFORATIONS
4. FINISHED BEVELS
5. MORE BEAUTIFUL AND EFFICIENT



Simpson QUALITY SINCE 1895 **ACOUSTICAL TILE**

SIMPSON LOGGING COMPANY, Sales Division, 1065 Stuart Bldg., Seattle 1, Washington

THESE SIMPSON ACOUSTICAL CONTRACTORS OFFER YOU A COMPLETE ACOUSTICAL SERVICE

ALABAMA
Stokes Interiors, Inc., Mobile

ARIZONA
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CALIFORNIA
Coast Insulating Products, Los Angeles
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COLORADO
Construction Specialties Co., Denver

ILLINOIS
General Acoustics Company, Chicago

INDIANA
The Baldus Company, Inc., Fort Wayne

KANSAS
Kelley Asbestos Products Company, Wichita

LOUISIANA
Pioneer Contract & Supply Company, Baton Rouge

MINNESOTA
Dale Tile Company, Minneapolis

MISSISSIPPI
Stokes Interiors, Inc., Jackson

MISSOURI
Kelley Asbestos Products Company, Kansas City
Hamilton Company, Inc., St. Louis

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Kelley Asbestos Products Company, Omaha

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OHIO
The Mid-West Acoustical & Supply Co., Cleveland, Akron, Columbus, Dayton, Springfield and Toledo

OREGON
Acoustics Northwest, Portland
R. L. Elfstrom Co., Salem

TENNESSEE
D. E. Madden Co., Inc., Memphis, Nashville

TEXAS
Blue Diamond Company, Dallas
Otis Massey Company, Ltd., Houston

UTAH
Utah Pioneer Corporation, Salt Lake City

WASHINGTON
Elliott Bay Lumber Company, Seattle

WISCONSIN
Building Service, Inc., Milwaukee

THE life of 40-watt fluorescent lamps can be shortened as much as 1,000 hours by improperly designed ballasts.

You can avoid this costly loss . . . save on lamp replacement and maintenance . . . by specifying the ballasts that assure you full rated lamp life . . . CERTIFIED BALLASTS!

CERTIFIED BALLASTS are made to exacting specifications, then tested, checked and certified by an impartial authority, Electrical Testing Laboratories, Inc.

Up to the minute information on the types of CERTIFIED BALLASTS available from each participating manufacturer may be obtained from Electrical Testing Laboratories, Inc., 79th St. and East End Ave., New York, New York.

CERTIFIED BALLAST MANUFACTURERS

Makers of Certified Ballasts for Fluorescent Lighting

2116 KEITH BLDG., CLEVELAND 15, OHIO

THE BEST TENANTS are SATISFIED TENANTS

and Honeywell P.H.C. in Apartments.....

KEEPS THEM SATISFIED!

ONE sure way to keep tenants satisfied is to give them the amount of heat they want . . . when they want it! A big order under ordinary methods. But with Honeywell Personalized Heating Control each tenant family controls its own temperature, individually. As a consequence there's no longer need for one apartment to be too cold, another too hot. With PHC there's no need to fire the heating plant to capacity, thereby overheating the entire building just to satisfy a few "cold-blooded" occupants. Substantial fuel savings result. And too, management gains the advantage of being able to secure desirable tenants on longer leases, and at premium rentals.

Honeywell Personalized Heating Control is currently being installed in thousands of apartment buildings, both new and existing. Why not familiarize yourself with all the facts on PHC. Contact the Honeywell branch office near you, or write: Minneapolis-Honeywell, Minneapolis 8, Minnesota. In Canada: Toronto 17, Ontario.

MINNEAPOLIS

Honeywell

FIRST IN CONTROLS

DEPENDABLE CONTROLS COST LESS THAN SERVICE

CAN YOU FIGURE THE INSTALLED COST OF Q-FLOOR?

The installed cost of Q-Floor is the quoted cost, less the savings which Q-Floor effects in construction time and in reducing the amount of other materials.

Before you say what Q-Floor costs, you should figure how much *sooner* your job will be *completed*, if Q-Floors are used . . . usually 15 to 20% sooner.

Time saved by Q-Floors saves financing; reduces construction costs; brings earlier revenue. Lightweight Q-Floor construction saves materials in foundation and frame.

Less easy to deduct from final cost (but just as real), are savings by subcontractors using Q-Floor as a working platform and storage space; savings in your drafting room because of fewer revision drawings, since you need no preset inserts and because electrical outlets and partitions can be located after tenants move in.

In addition to these cash savings, Q-Floors protect a building against electrical obsolescence . . . an outlet can be established in a matter of minutes *on any six-inch area of exposed floor without digging trenches.* Tenants are spared the usual enormous electrical alteration bill. This is an inducement to prospective tenants that gives Q-Floor buildings a competitive edge in the rental market.

The quoted, per-foot-cost of Q-Floor is less than the cost of carpet to cover it. But the final cost, with all factors considered, comes out even lower. That's what clients buy.

H. H. ROBERTSON CO.

2405 Farmers Bank Building
Pittsburgh 22, Pennsylvania

Offices in 50 Principal Cities
World-Wide Building Services

Waterman Building
Mobile, Alabama
Architect: Platt Roberts & Associates *Contractor:* J. P. Ewin, Inc.

Left: Architect Platt Roberts and his Associates, O. W. Long, Jr. and A. B. Benson

WRITE FOR LATEST Q-FLOOR LITERATURE

Everyone likes the charm and beauty of pegged oak floors

■ Nothing adds more style and appeal to a home than a bright, colorful Ranch Plank Floor with its walnut pegs, alternate widths, and Decorator Finish.

These distinctive oak floors have been commended by top architects and interior decorators for homes of all styles, modern and traditional. No matter what an owner's decorative scheme may be, the mellow coloring and interesting pattern of a Bruce Ranch Plank Floor will always harmonize with furniture and furnishings. They are in good taste in any setting.

The beauty of these floors will never grow old . . . because they are solid oak with a superb factory-applied finish. With simple care a Ranch Plank Floor will last not only a lifetime . . . but for generations.

These floors are easily laid by blind nailing over wood subfloor or old floors. Their installed cost is about the same as for regular strip floors sanded and finished on the job.

For color booklet and complete data on Ranch Plank Floors, write: E. L. BRUCE CO., MEMPHIS 1, TENNESSEE.

Bruce Ranch Plank Floor

BRUCE *IT'S PEGGED AND FINISHED AT THE FACTORY*

In a City of Beautiful Buildings

Celotex Roof Insulation is proving itself where it counts most: ON THE JOB!

KASS BUILDING, WASHINGTON, D. C.
specified Celotex Roof Insulation

Architect: James F. Hogan

Roofing Contractor: Easterday-Duckworth Company

Owner and Builder: Kass Realty Company, Inc.

Only the finest of materials were specified for the ultra-modern Kass Building — one of the newest office buildings in the nation's capital. Among these, naturally, was Celotex Roof Insulation.

There's a type of Celotex Roof Insulation for every job

REGULAR — for efficient insulation at lowest cost.

PRESEAL — with asphalt coating for extra moisture protection.

PRESEAL "30" — with asphalt coating; special low density core; guaranteed 0.30 conductance for nominal 1" thick material before coating.

VAPOR-SEAL — with asphalt coating; guaranteed 0.30 Btu conductance for nominal 1" thick material before coating; and patented recessed edges that form channels which help prevent roof blisters by equalizing the pressure of air trapped under roofing.

In roof insulation, as in everything else, *the payoff is in performance!* And no other roof insulation can challenge the *job-proved* record for quality, durability and economy set by Celotex Roof Insulation through over 25 years of actual use in all types of installations, all over the country.

Celotex Roof Insulation is low in initial cost, easy to handle, exceptionally durable. It speeds application, reduces labor costs, helps assure a superior, long-lasting roof that requires less maintenance.

So why take risks with untried materials? For complete satisfaction, always specify Celotex Roof Insulation. There's a type to meet every job requirement. Write now for complete technical data! The Celotex Corporation, Dept. PA-100, Chicago 3, Illinois.

1. High Insulating Efficiency means greater comfort the year 'round, plus reduced heating and air conditioning costs.

2. Low in Cost all three ways: initial, applied, maintenance.

3. Quick, Thrifty to Apply: installed with less time, work and cost because it's light and easy to handle. Strong and rigid—doesn't have to be "babied" on the job.

4. Provides Excellent Bond for hot mopped roofing felts of either the asphalt or coal tar pitch type.

5. Durable, Long-Lasting. It is the *only* roof insulation made of long, remarkably strong Louisiana cane fibres—and protected by the *exclusive* patented Ferox® Process against dry rot, fungus and termites.

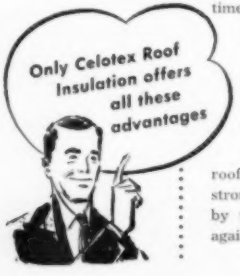
It pays to specify genuine

CELOTEX

REG. U. S. PAT. OFF.

ROOF INSULATION

The Celotex Corporation
Chicago 3, Illinois



ANNOUNCING WESTINGHOUSE

Synchro-Glide Landing...

THE MOST DRAMATIC ELEVATOR DEVELOPMENT IN THIS FIELD!

Now—the amazing, new control, Synchro-Glide Landing, produces elevator rides that are smoother than a gull's glide . . . softer than a feather's landing . . . quicker than you ever imagined!

After more than 25 years of constantly improving inductor landing—the system that automatically stops the car exactly at floor level without overshooting—Westinghouse has perfected Synchro-Glide Landing. Only with Synchro-Glide Landing, the ultimate in car control, can elevators give you all this—

SOFTER, SMOOTHER LANDINGS—The smooth, uniform, gliding stops will astound you. Synchro-Glide's *dynamic* braking action lands a car so softly you scarcely feel the brake set.

ACCURATE FLOOR-LEVEL LANDINGS *UNDER ALL CONDITIONS*—With Synchro-Glide you are sure of floor-level landings of unmatched exactness. *No re-leveling regardless of load or temperature changes.* Yet, the accuracy of these landings is protected while passengers are entering or leaving the car.

FASTER FLOOR-TO-FLOOR TIME—Synchro-Glide makes the car accelerate fast and evenly to the maximum possible speed . . . slow down quickly and smoothly. And—as the car is making its perfect-level landing, the doors are opening . . . ready for passengers to exit. *The total result*—floor-to-floor time cut to the absolute minimum!

The secret of Synchro-Glide Landing is the teaming of experience-proven Inductors with Rototrol—the exclusive Westinghouse developments that force each car to follow a predetermined pattern.

And—Synchro-Glide Landing is perfectly integrated with Selectomatic Supervision (the ingenious "electrical brain" that *instantly* and *automatically* matches calls to cars to floors). This integration gives you the most perfect vertical transportation system you can buy . . . Selectomatic *PLUS!*

SEE IT TODAY—right in your own office! See and hear how Selectomatic *PLUS* Synchro-Glide Landing will solve your elevator problems. Write on your letterhead and we'll gladly arrange a showing of our new, sound motion picture "Synchro-Glide Landing for Elevators." Elevator Division, Westinghouse Electric Corporation, Dept. E-1, Jersey City, N. J.

YOU CAN BE SURE...IF IT'S

Westinghouse

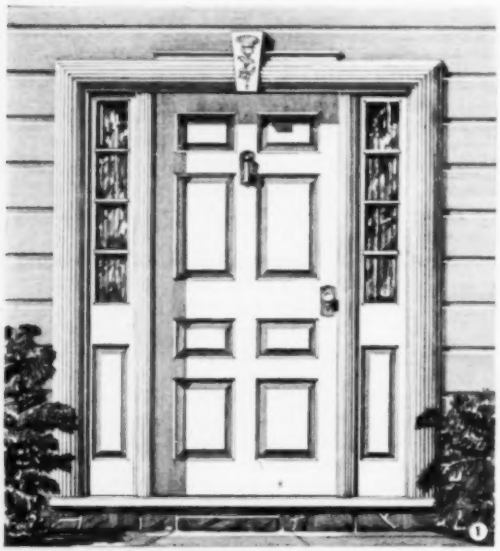
J-98582

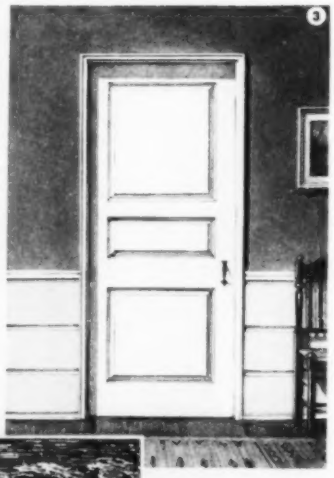
MORGAN WOODWORK

Pinewood DOORWAYS

reflect the good judgement of those who plan, equip, and build the better homes of today and tomorrow.

The "main entrance" deserves more than haphazard selection. The Doorway is the focal point as long as the residence stands. Morgan Doorways are architect-designed for authentic, harmonious appearance; craftsman-constructed for generations of lasting service. Many Morgan designs simplify selection for every architectural style. All Morgan Woodwork Designs contribute immeasurably to the looks and life of the finished structure.





Detail shows sturdy construction of M-1073 Morgan Interior Door with 5/6" hip-raised panels, 2 sides.

Same design: M-117 Exterior Door with 1⅛" hip-raised panels, 2 sides.

MORGAN Entrances Interior and Exterior Doors

are expertly built, using carefully selected No. 1 Pinewood. Morgan craftsmen have excelled in door construction for nearly a century . . . since 1855.

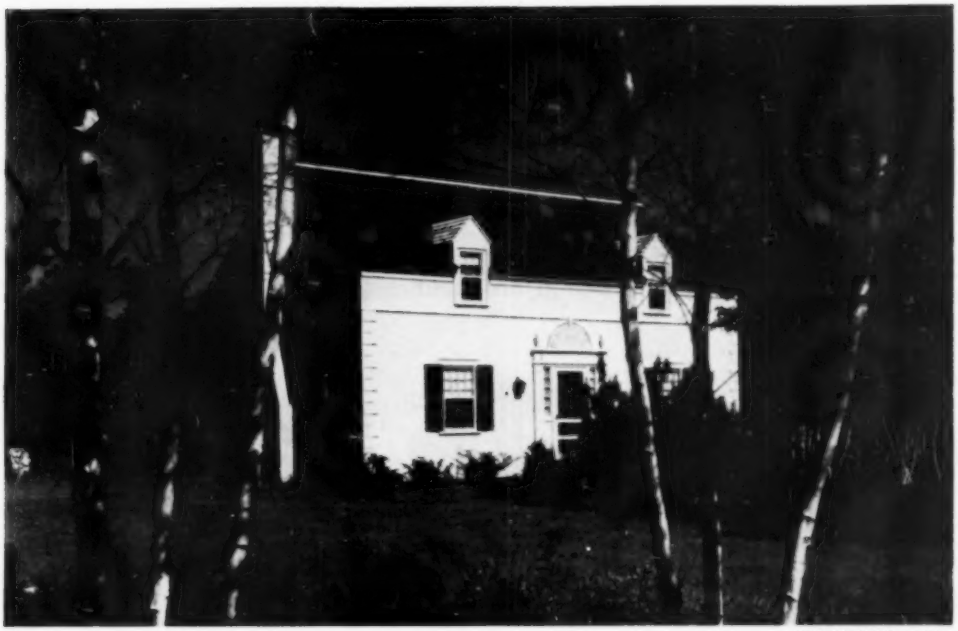
1. Door M-102 in Entrance M-31.
2. Door M-120J with M-510 Door Blinds.
3. M-1073, the most beautiful Interior Door made.
4. Door M-100 in Entrance M-14.

Send Now for your free copy of "Morgan Doorways" . . . full of ideas for architects — builders — dealers.

MORGAN COMPANY

Manufacturers, Oshkosh, Wisconsin: Entrances
Doors • Corner Cases • Mantels • Kitchen Cabinets
Morganwalls • Trim • Windows • Stairwork

MORGAN WOODWORK



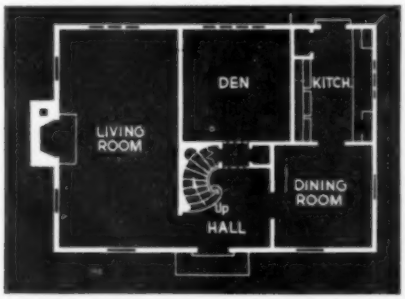
GEORGE PAUL, *Architect*

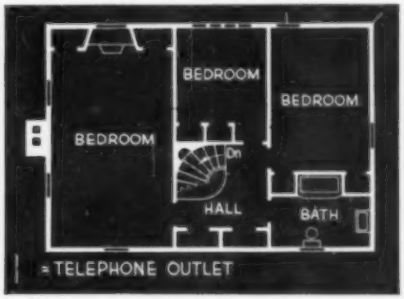
PLAN A HOME WITHIN A HOME— FOR TELEPHONE WIRES

Give telephone wires a place of their own and they'll never interfere with attractive walls and woodwork. Built-in raceways conceal telephone wires. And they provide for telephone outlets at the right places—a real convenience for home owners.

Simple wiring channels can be installed easily *while a home is under construction.* A few lengths of pipe or tubing, placed inside the walls, will carry telephone wires to the planned outlets. The slight additional cost is more than offset by customer satisfaction.

For homes large or small, your Bell Telephone Company will be glad to help you plan modern telephone arrangements. For free telephone planning service, call your Telephone Business Office.



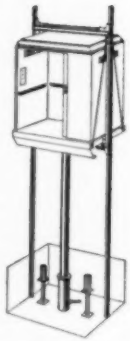


BELL TELEPHONE SYSTEM

LOOK WHAT ROTARY OILDRAULIC POWER IS DOING IN MODERN BUILDINGS

OIL UNDER PRESSURE is the operating principle of Rotary Oildraulic equipment. It is usually the most economical and efficient method of lifting heavy loads on rises up to 40 feet.

ROTARY OILDRAULIC ELEVATORS require no penthouse or heavy sidewall structure



You can streamline your building designs and cut construction costs by specifying Rotary Oildraulic Elevators. There's no need for a costly, unsightly penthouse because this modern elevator is pushed up from below, not pulled up from above. Nor does the building structure have to be designed to support all the load of the elevator and its contents. The powerful Oildraulic jack does that. Actual figures on jobs throughout the nation show savings up to 25% or more where these modern elevators have been used. Write for Catalog RE-303.

Rota-Flow insures velvet-smooth operation

A revolutionary new hydraulic power transmission system (Rota-Flow) moves Oildraulic Elevators on a continuous, pulsation-free column of oil. Vibration and pumping noise eliminated! Cushioned starts and stops are assured by Rotary's famous Oildraulic Controller. Automatic floor-leveling guarantees landings within ¼ inch, regardless of load or speed. The Rota-Flow system operates with greater efficiency than any other oil-hydraulic power unit!

←ROTARY LEVA DOCK . . . the self-leveling ramp for loading docks

The Leva-Dock makes it possible to load directly into or unload from all types of trucks or trailers . . . without using steel plates, bridge ramps, or other slow and frequently dangerous methods. Here's how it operates: The Leva-Dock is positioned to truck bed height by a hydraulic jack. One end of platform is hinged into loading dock; other end automatically travels up and down as truck springs are relieved or compressed during loading or unloading. Write for Rotary Catalog RE-150.

ROTARY LEVELATORS save space, eliminate ramps, speed material handling →

Levelator Lifts make it possible to handle materials directly from plant floor to other levels. They save at least 400 sq. ft. of ramp space, frequently eliminate loading docks altogether. You can simplify building designs by using this modern equipment. Plant floors can be located at grade or other most economical level. Write for Rotary Catalog RE-202.

Over 55,000 Rotary Oildraulic elevators and lifts now in use throughout the nation

Users throughout the nation will confirm your judgment when you specify or recommend a Rotary Oildraulic Elevator. No elevator is designed to more rigid specifications or has been tested under more severe service conditions. The powerful Oildraulic jack, precision power units, and magic Oildraulic Controller all assure smooth, trouble-free operation.

Functional design and rugged construction are typical of all Oildraulic equipment. Rotary also offers the most complete service in this field through its nation-wide sales, engineering and service organization.

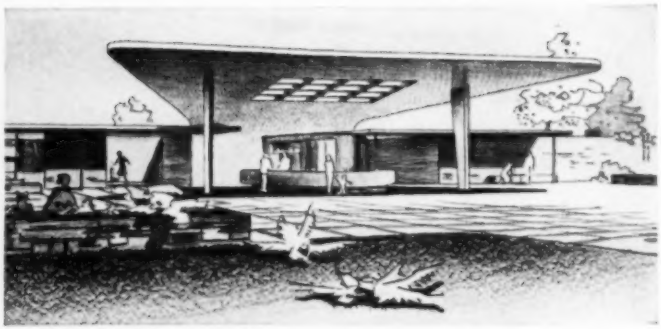
Rotary Lift Company, 1122 Kentucky, Memphis 2, Tenn. • World's largest maker of oil-hydraulic elevating devices

Rotary **Oildraulic Elevators**

LEVELATORS, LEVA-DOCKS

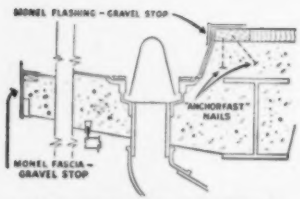
★ *See our catalog in Sweet's*

PLANNED FOR PLAY – BUILT TO STAY. Architect's drawing of bath house entrance at St. Clair Metropolitan Beach, new Michigan play spot constructed by the Huron Clinton Metropolitan Authority. The two supporting beams are of steel, covered with long-lasting, corrosion-resisting Monel. All fasciae and gravel stops are also Monel. Architects: O'Dell, Hewlett and Luckenbach, Detroit 26, Mich. Fabricator: W. P. Hickman Co., Birmingham, Mich.

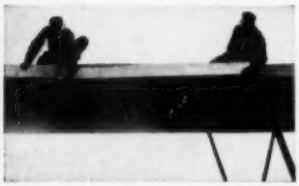


Where clients seek economy–

Careful planners put MONEL on top



DETAIL OF MONEL GRAVEL STOP DESIGN above beach entrance to bath house, from plans of O'Dell, Hewlett and Luckenbach. Specifications call for use of Monel "Anchorfast" nails–"The nails with the holding power of screws."



WORKMEN INSTALL MONEL FASCIAE on beach canopy which connects the cafeteria and bath house buildings.

FOR HELP WHEN YOU NEED IT

Call on *INCO's* Technical Service any time you want specific information on contemplated uses of Monel Roofing Sheet And remember that samples, booklets for clients, working instructions for contractors and fabricators, and other helpful literature are always available to you without cost or obligation.

Come along to St. Clair Metropolitan Beach–Michigan's newest play spot!

The voters of five counties approved a special levy enabling the Huron Clinton Metropolitan Authority to finance this multimillion dollar recreational area, located just 22 miles from Detroit's City Hall.

For a good many roofing parts – and for a good many reasons, too – the architects, O'DELL, HEWLETT AND LUCKENBACH, specified MONEL® Roofing Sheet.

With its low expansion rate, its high strength and toughness, its resistance to fatigue, corrosion and erosion, Monel assures "life-of-the-building" protection for structures at the playground.

Structures, for example, like the flat concrete canopies above the promenade walks. (See illustration at left.) These canopies have Monel fasciae and gravel stops. And the canopy supports at the bath house entrance (shown above) are sheathed with Monel.

As we move around the 550-acre tract that was reclaimed from the low, swampy ground of the Lake St. Clair shore, we find that every building has Monel fasciae, Monel gravel stops. That all exposed flashings are Monel. That leaders and gutters on the administration building and cafeteria have been fabricated from the same rugged Nickel Alloy.

For all these applications, the excellent mechanical properties and high corrosion-resistance of Monel are important. They bring dependable protection from heat, sun and dampness – from wind, rain and swirling sand. *They mean long life and low maintenance expense.*

And here's another advantage! They make it possible to use reduced sheet thicknesses, which are more economical and lighter in weight.

Do *your* clients a lasting service – recommend Monel for roofs and roofing parts on their buildings!

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Shown at the left are Reynolds *Lifetime* Aluminum Gutters, Ogee style, on the House of Charm, Detroit. Below are details of two residential and one industrial style. For folder in A.I.A. file form, please address **Reynolds Metals Company,** Building Products Section 2014 So. Ninth St., Louisville 1, Ky. Offices in 32 principal cities.

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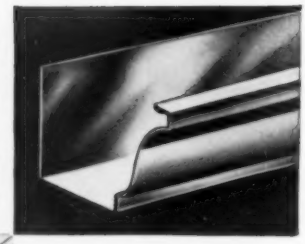
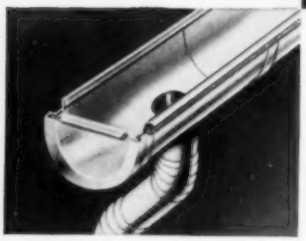
Profile of 5" Ogee style Gutter, supplied with 3" square Downspouts, both in 10' lengths. Allow one downspout for each 700 sq. ft. roof area. Fittings include Slip Connectors, End Caps, Sections with Outlet, Outside and Inside Mitres, Strap Hangers, 60° and 75° Elbows, Pipe Bands, Strainer, Aluminum Nails. *Available in either smooth or stipple-embossed finish.*





Reynolds 5" Half-Round Gutter, supplied with 3" Downspouts either plain round or corrugated. Allow one round downspout for each 700 sq. ft. roof area, one corrugated for each 600 sq. ft. Matched fittings as for Ogee. *Available in either smooth or stipple-embossed finish.*

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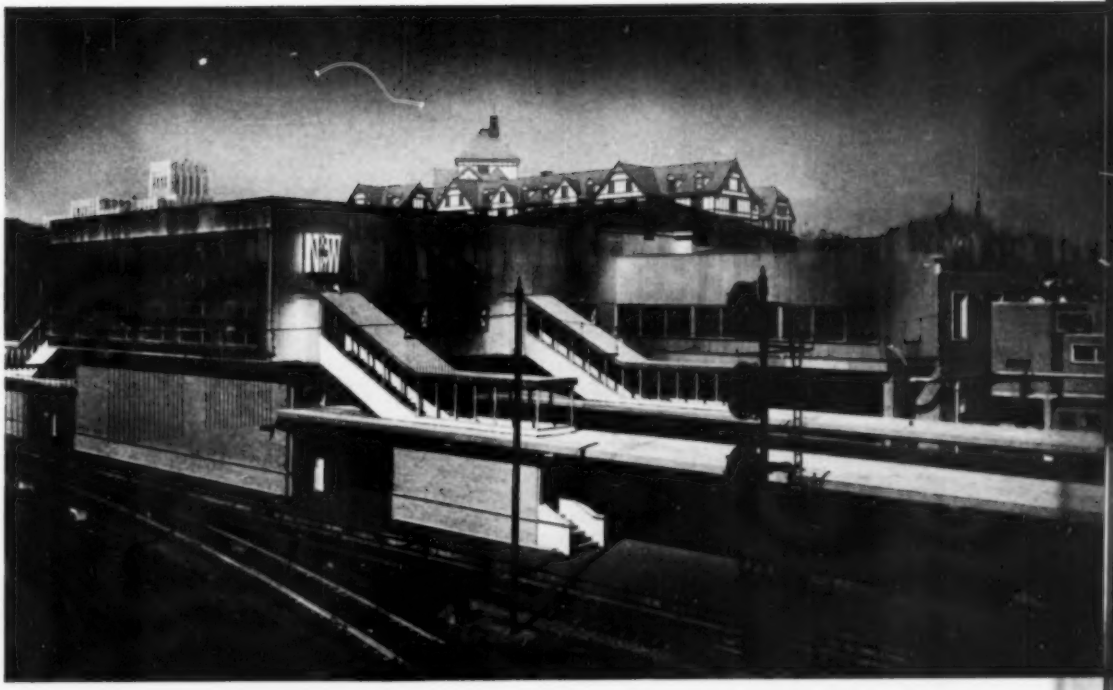


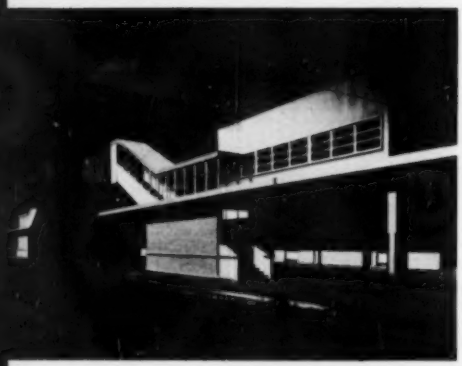
Railroad Station: Roanoke, Virginia

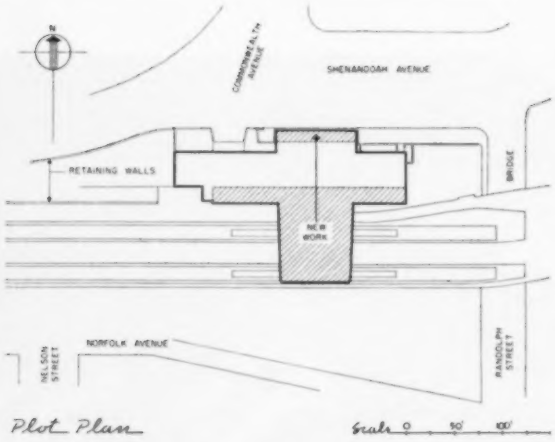
RAYMOND LOEWY ASSOCIATES, CONSULTANT DESIGNERS ALLMON FORDYCE, ARCHITECT

The commission involved both remodeling and enlarging an outmoded station. At top of page are views from track side, showing the new and old south concourse mass and track platform shelters.

At left and above—the new and old fronts of the station. *Photos: Gottscho-Schleisner*

RAILROAD STATION: ROANOKE, VIRGINIA





program Complete renovation of a railroad station that was both structurally weary and inadequate in size; provision of covered shelter along main front, new platform shelters, and moving stairways; addition to waiting-room and concourse spaces.

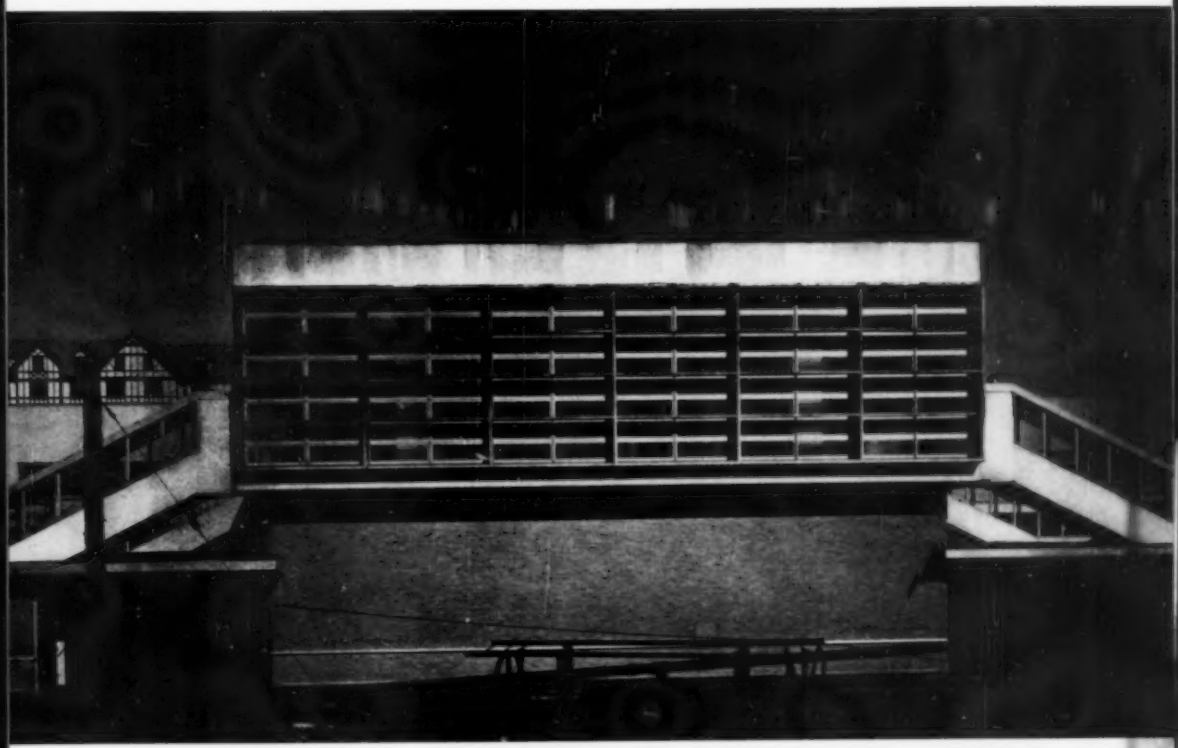
site Existing, with street level of station 24 feet above tracks. Front of station faces north.

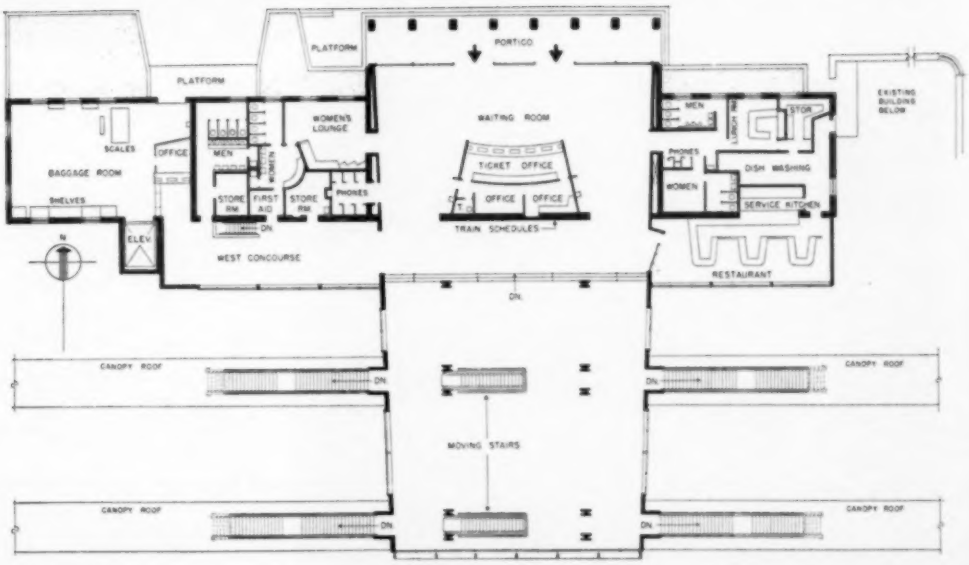
solution To add to the station's capacity and to passenger comfort, a major decision was to span the tracks with a concourse addition on the south (rear) of the station. A window wall at this end, plus opening up the front wall with windows, re-oriented the plan from one with an east-west emphasis to a scheme where the major axis is north-south. Throughout, an important design consideration was selection of durable, economical materials that would be easy to maintain. Virginia's segregation laws required provision of separate toilets and eating places, but at least there is a single waiting room and concourse, and the same kitchen serves both eating places.

A design requirement was retention in some degree of the original identity of the front of the building, including the hipped roof. Coping with these existing masses, while providing the long, sheltered porch, results in a somewhat uncertain design unit. The aluminum-sheathed concourse addition at the rear and 1500-foot-long shelters for stairs and platform, however, seem totally contemporary and confident and a sparkling addition to architecture for transportation.

In addition to air conditioning (filtering; fan ventilation) and acoustically treated ceilings, the entire terminal has a radiant panel heating system. Floors are concrete, finished in terrazzo; and the ceramic tile walls range in color from warm gray to gray-green in the dining room, brick red in the concourse, and pale blue in the white women's lounge. Throughout, windows are aluminum framed.

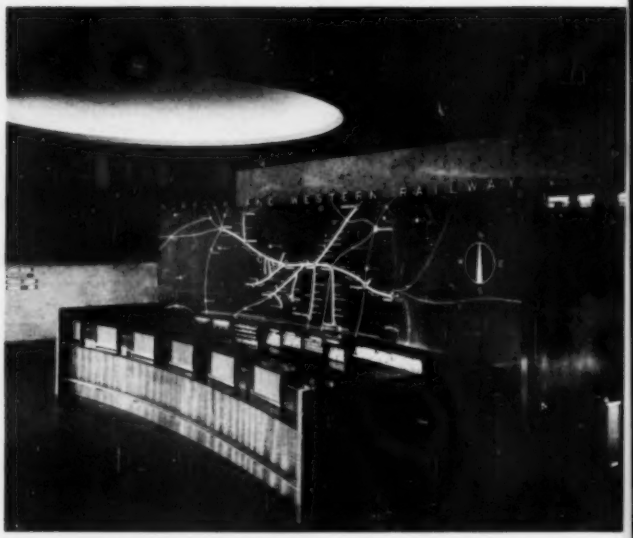
materials and methods CONSTRUCTION: Reinforced concrete foundation. *Frame:* structural steel. *Walls:* brick and concrete block; limestone trim. Interior surfaces—tile, marble, plastic, and wood. *Floors:* concrete; terrazzo; cork tile. *Roof:* steel roof decking; built-up roofing on concourse area and platform shelters. *Insulation:* acoustical ceiling tile. *Fenestration:* aluminum stationary and projected sash; extruded aluminum frames for glass walls at north and south ends of waiting room and concourse area; ¼" plate glass; double insulating glazing in big window walls; tempered plate glass for moving-stairway enclosures.
EQUIPMENT: *Heating:* radiant system in floor for all major areas; hot water radiation in minor areas; thermostatic controls. *Air Conditioning:* fans; diffusers, grilles; filters; controls. *Special equipment:* moving stairways; public address system; overhead doors.





Floor Plan

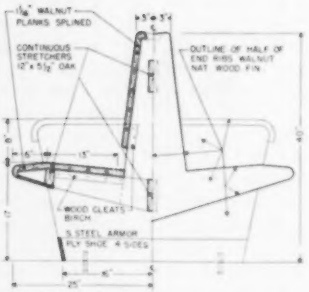
Scale 0 ____ 80'



Above—the new north wall of double insulating glazing (left) leads into the terrazzo-floored waiting room, with its curved ticket counter in the center (right). Flush downlights, and concealed indirect lighting in the ceiling dome light the area at night.

Left—detail of south end of concourse, showing one of the new moving stairways, between columns.

Below—detail of waiting bench.

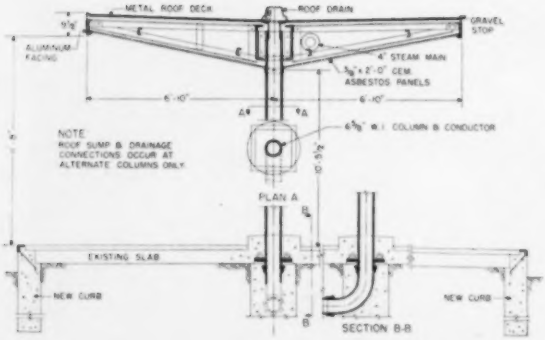

1/16" WALNUT PLANKS SPLINED
CONTINUOUS STRETCHERS 12" x 5 1/2" OAK
OUTLINE OF HALF OF END RIBS WALNUT NAT WOOD FIN
WOOD CLEATS BIRCH
S STEEL ARMOR PLY SHOE 4 SIDES

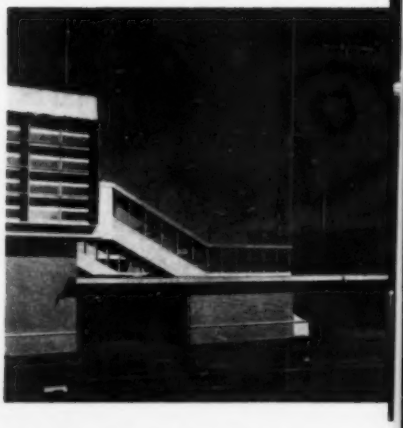
Half Section & End View of Bench

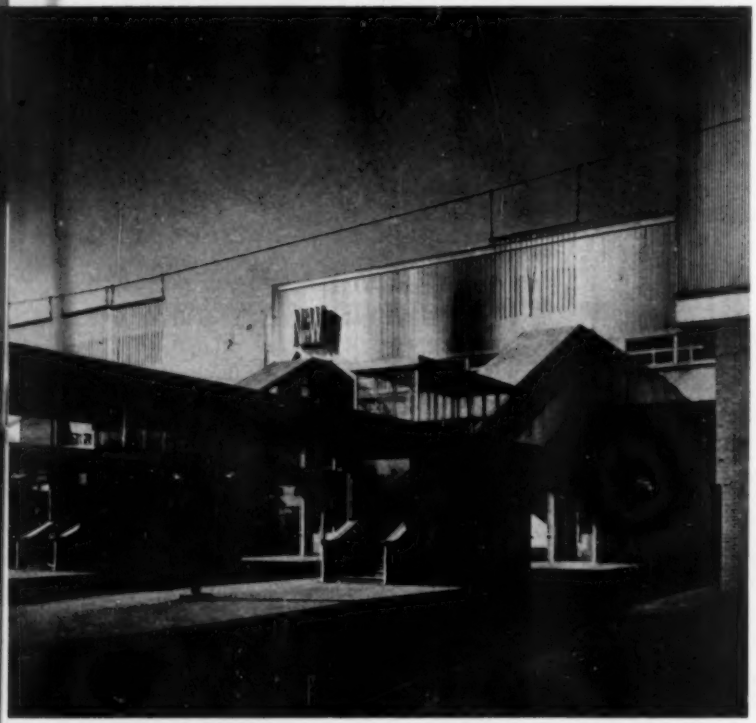
Above—behind the ticket counter is this marble-surfaced wall with the train schedule board. This wall is a portion of the rear wall of the old station.

Left—the west wing off the intermediate concourse area.

Below—the east wing houses the larger of the restaurants with south windows overlooking track activities 24 feet below.







The former cast-iron construction of the old stairwells has been enclosed in brick and terrazzo; glass in clerestories provides auxiliary lighting.

Left—detail from the station side. Above—view from across the tracks. Horizontal aluminum-surfaced fins assist light control through the huge, insulated glass south wall of the concourse.

RAILROAD STATION: ROANOKE, VIRGINIA

The Architect and Defense Construction

By DANIEL WENTWORTH WRIGHT *

A COUPLE OF MONTHS AGO, shortly after the Korean news broke, I decided to try for a better record in *these* uncertain times than I had earned for myself during World War II.

For the duration of that war I managed to be useful, but not as useful as I might have been. You can probably top my pre-war record, but I will tell you what it is, so that you can get an idea of what I think is usefulness.

I have been in the general practice of architecture for 25 years. During that time my designs have resulted in a rather wide range of types of structures: 6 factories; 10 churches; 3 major shopping centers; 2 hospitals; 5 apartment houses; 97 camps, lodges, etc.; 30 farm estates; 350 or more remodelled farm estate buildings; more than 1100 one-story houses (within a cost range of five to fifteen thousand dollars); more than a dozen summer camps in Maine, Vermont, New York, and Pennsylvania; and several $60,000 to $90,000 houses.

From this background of experience, I tried to be useful in World War II. I ended as co-ordinating architect for the Johns-Manville Corporation. It was a fine job. I enjoyed it. I appreciated the honors it carried. Among other things, I did the original design research and superintended construction of the now famous Johns-Manville Research Laboratories. Also, the job gave me an enviable opportunity to work with specialized engineers.

Always, I have associated myself with engineering partners who could go down the line with me on economy and efficiency of design and execution. Since my Johns-Manville experience, incidentally, I have made a point of always having at least three engineering associates (mechanical, sanitary, and specialized) because of the highly specific directions of their work.

RIGHT NOW we don't know just what we are facing. We hear rumors that we are on the verge of an elaborate national defense activity—other rumors to the effect that it will be an inch-by-inch defense program—as forceful or elaborate as outside pressures may make necessary. Other rumors suggest that our leaders may decide that they will have to adopt a stand of aggression or hostile resistance. Therefore, it seems to me, all of us in the construction arts and trades need to take stock of the situation and to be ready to deliver whatever may be required of us—in either eventuality.

With this thought in mind, I conducted a rather thorough investigation of possibilities for my services (in the current civil and military construction program) with the chance that large-scale international hostilities would change current plans and projects. I learned that *any architect* can receive all available information on this subject, from his local district office of the U.S. Engineers, in charge of all U.S. civil and military construction.

Districts are grouped within Divisions and headed by Divisional Offices as follows:

Boston, Mass.	Dallas, Tex.
New York, N. Y.	Oakland, Calif.
Washington, D. C.	Portland, Ore.
Atlanta, Ga.	Omaha, Nebr.
Mobile, Ala.	Chicago, Ill.
Vicksburg, Miss.	Cincinnati, Ohio

Applications may be filed advantageously in both your Divisional Office and your nearest District Office. These are:

Boston, Mass.	Albuquerque, New M.
New York, N. Y.	Los Angeles, Calif.
Philadelphia, Pa.	San Francisco, Calif.
Baltimore, Md.	Oakland, Calif.
Washington, D. C.	Sacramento, Calif.
Norfolk, Va.	Portland, Ore.
Wilmington, N. C.	Seattle, Wash.
Charleston, S. C.	Walla Walla, Wash.
Savannah, Ga.	Fort Peck, Mont.
Atlanta, Ga.	Omaha, Nebr.
Jacksonville, Fla.	Kansas City, Mo.
Mobile, Ala.	St. Louis, Mo.
Nashville, Tenn.	Milwaukee, Wis.
Memphis, Tenn.	St. Paul, Minn.
Tullahoma, Tenn.	Chicago, Ill.
Vicksburg, Miss.	Rock Island, Ill.
Little Rock, Ark.	Detroit, Mich.
New Orleans, La.	Huntington, Ohio
Galveston, Texas	Cincinnati, Ohio
Dallas, Texas	Louisville, Ky.
Fort Worth, Texas	Pittsburgh, Pa.
Tulsa, Okla.	Buffalo, N. Y.
Garrison (Bismark), N. D.	

BEING A RESIDENT citizen of New Jersey, I learned that the U.S. Engineers' New York District Office handled all such work for New York, New Jersey, and Delaware. I applied there for attention to my credentials. The men in charge met me *more* than half-way and gave me so much general information that, on their authority, I am passing it along to you. What holds true in this district office is equally applicable anywhere in the United States.

If an architect or an architect-engineer organization wishes to apply for civil or defense construction contracts, there is an established routine for his application:

1. Obtain a set of four application blanks from your district office (three to be returned to the office when filled out: one copy to be retained for your files).

* *A.I.A., Short Hills, New Jersey.*

2. Record full data, descriptive of all types of construction to which your designs have been carried out, including dates, places, etc.

3. Collect photos and prints of plans and plan studies which exemplify your best work in various types of structures.

4. Obtain a stout letter-sized binder (8½" x 11") for presenting your photoprints of actual structures, plans and studies, each exhibit prefaced by plain bond pages carrying pertinent comments.

5. Assemble your pages of examples and comments in the best continuity to suit your purpose and add to it a covering letter of statement on your whole experience and any extra credentials not covered in the visual presentation.

Your district office of the U.S. Engineers will be pleased to consider a comprehensive presentation, compiled according to the foregoing outline.

IN MY MORE RECENT CONTACTS, I have been told that the U.S. Engineers will be more than pleased to receive a full complement of applications of accredited architects and architect-engineer organizations, reporting man-power and facilities for the development of construction projects on a regional basis, whether or not peace conditions continue. It seems to be a general policy of the Engineers to use local, independent practicing architects for as many projects as possible. Under those circumstances the architects should surely co-operate by filing informative material with their district offices.

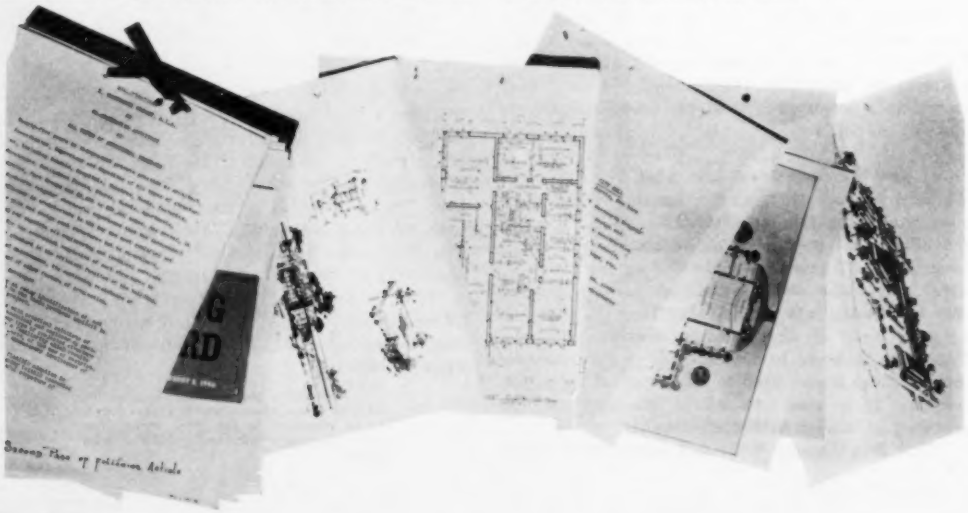
It is true that the present building program which is being forwarded by the U.S. Engineers is not extensive—particularly as compared to operations conducted during World War II. But that does not mean that the aggregate of federal building projects during the next two years will be negligible. Right now, a great deal of remodeling and rehabilitation is going forward as recently authorized by Congress. Plans for some new essential structures have either been approved for construction or are now being studied for final decision. Should hostilities increase, the possibility is that the construction program of the U.S. Engineers will increase proportionately.

WHEN I MADE MY APPLICATION, I submitted a rather full presentation of finished structures with reproductions of plans and studies of projects which had been completed. At that time, I learned that the Central office of the U.S. Engineers in Washington, D.C., maintains a cross-index of the various types of structures in which each architect or architect-engineer organization claims or proves experience.

This evidence of careful fair dealing pleased me immensely, because I am *not* a specialist. I have had some difficulty during the course of my professional career in proving that I could design and construct a factory, hospital, hotel, laboratory, or other highly specialized type of structure, as well as (or perhaps even better than) someone who had specialized in a single type of building.

WHEN I INQUIRED ABOUT THE TERMS under which contracts are executed for the U.S. Engineers, I was told that they are worked out on a cost-plus basis. You and I are accustomed to the percentage-fee basis, but it has been proved that something more flexible is necessary in federal work. *You will find that the percentage basis of your fee will be derived from a consideration of the combined factors of your payroll, your fees to associates, unusual expenses, and all other elements affecting cost. Your district U.S. Engineer office will work with the Central Office in Washington for a cost-plus fair-profit remuneration for your services.*

It seems to me that the current administration of civil and defense construction offers architects a real opportunity for additional practice and for patriotic achievement within their own communities on a fair and satisfactory basis.



p/a critique

Julius Shulman

architects' offices

As with any other design problem, an architect's office may be judged on its suitability for its everyday functional purposes. It may also be assayed on the basis of how successfully the finished design is integrated as a convincing unit. But also the appearance of an architect's office, in the impression it makes on potential clients, has exceptional importance. For the architectural profession is peculiarly distinguished (and limited) by the fact that clients usually come to it only once, for a single job. Hence, the professional office is the potential client's one major impression. Here (he would be justified in assuming) he gains a suggestion of the general type of result he might expect were he to employ the architect's services. Here the architect has a unique opportunity to state his design thesis.

It is encouraging that so many of the newer offices make the contemporary statement so clearly. As the four offices in this critique bear out, today's clients are likely to find a bright, sparkling, colorful, and inviting surround that reflects confidence in today and tomorrow, rather than dependency on the past. "If you will work with me," the architect seems to say architecturally, "I can show you how you may live more pleasantly; how you can utilize the simpler, efficient things that modern technology produces—and you won't need the resources of Fort Knox to pay for it, either."

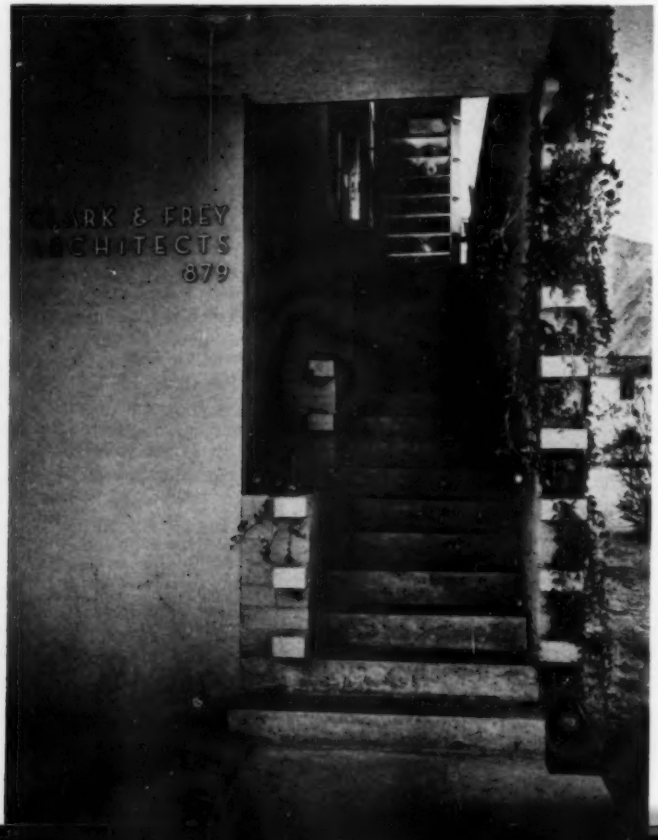
All of the jobs shown in this critique may be profitably studied for resourceful planning to facilitate the routine functioning of an architect's office as a place to receive visitors; a place to talk things over; a place to store things, and to practice (especially in the drafting room, where the detail goes forward). It is noteworthy that three of the four jobs were designed with separate rental units. Judging from the comments of these firms, it appears that this is an entirely workable scheme as the income is a real aid in carrying office overhead.

Left—general street front view. The ladder-like pylon at the top of the stairs is the aluminum-baffle enclosure for the air-cooling tower.

Below—detail of stairs up to the architects' offices. *Photos: Julius Shulman*

Palm Springs, California

CLARK & FREY, ARCHITECTS



program A new building next door to the offices the architects had occupied for 15 years. A two-story structure, with the offices upstairs and a rental unit on the ground floor.

site Flat, 30′ x 110′ streetfront lot, facing east.

solution Store space on ground floor, with common rear hall, off which are toilets for the building. Stair along north side leads to architects' offices; balcony on front included to reduce noise and distraction of street in conference rooms (also, as the architects point out, desirable for viewing Western Horse Shows and the annual Desert Circus). Direct plan arrangement: with reception room and reproduction equipment across the center; the conference rooms (which may be made into one large room) on the front; and the big, north-lighted drafting room to the rear, with a clerestory for additional north light. Specialized storage units are aligned along the south wall of the drafting room.

materials and methods CONSTRUCTION: Reinforced concrete foundations and frame. *Walls:* exposed, painted concrete block, or wood frame finished with cement plaster; balcony facing and roof fascia are surfaced with 1″ corrugated aluminum. *Floors:* wood frame, linoleum surface, wax finished. *Roof:* wood, with built-up roofing. *Insulation:* acoustical—cane-fiber ceiling tile; thermal—4″ mineral wool. *Partitions:* wood stud; plaster; white Philippine mahogany plywood; structural glass; patented folding wall. *Fenestration:* architectural- projected sash; clear glass; aluminum storefront sections.

EQUIPMENT: *Heating:* electric duct type in offices; fan type in store. *Air Conditioning:* electric 5-ton unit; 4-way deflection diffusers; dust filter; automatic controls. *Lighting:* fluorescent.

Clark

Frey

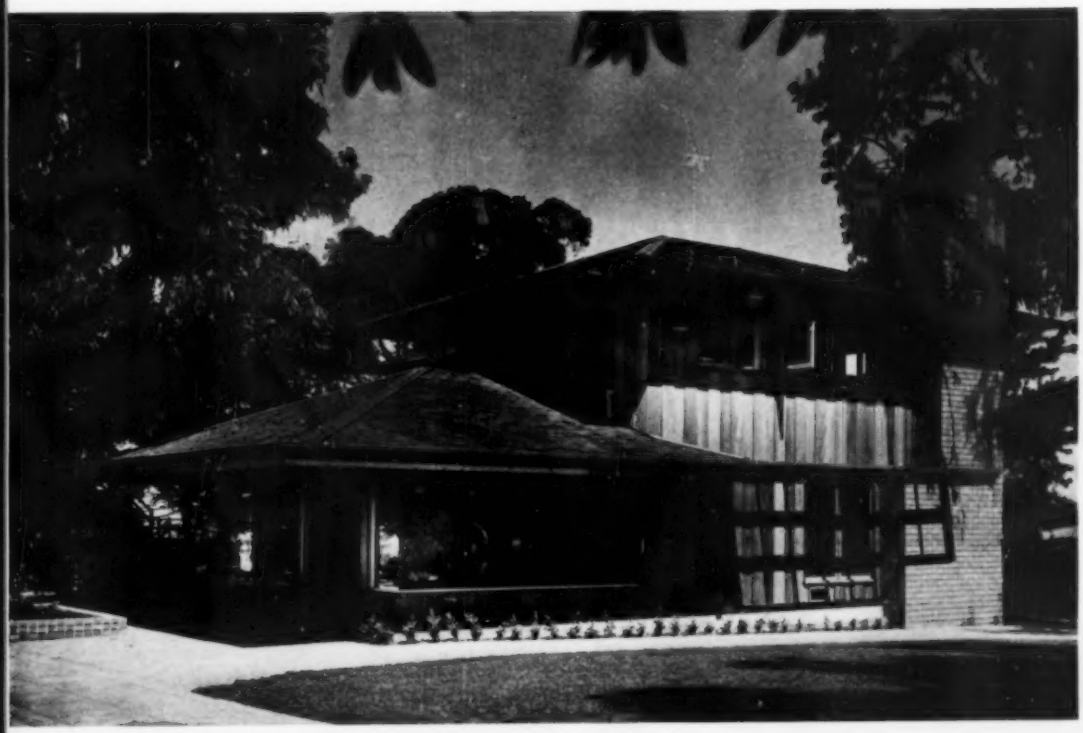
critique An uncomplicated, straightforward scheme, both in its planning and design execution—a comment that might be made about almost any of the work that this firm has done. The plan of the offices is broken into separate rooms as little as possible, so that all of the area is put to work. The folding partition in the double conference room space is resourceful and economical. A neat, workmanlike design that should argue the effectiveness of the architects' services. The protruding brickwork at the entrance stair appears a bit fussy and insistent, but this may be a distortion produced by the camera angle.

PALM SPRINGS: CALIFORNIA

Above—reception room. Fins of air-cooling tower appear through entrance door at right.

Right—receptionist's desk. Corrugated glass partition at rear defines one half of the double conference room at the front.

Below—the drafting room. Structural wood joists in the skylight opening were provided to cut glare. Both the skylight and the window face north.



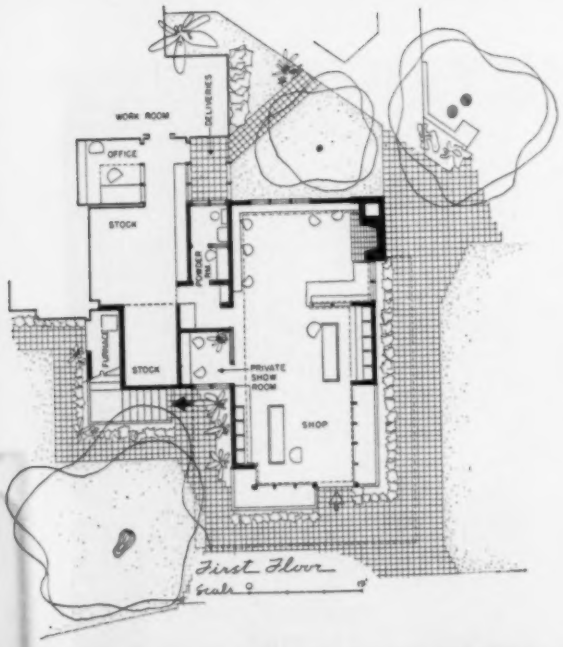
La Jolla, California

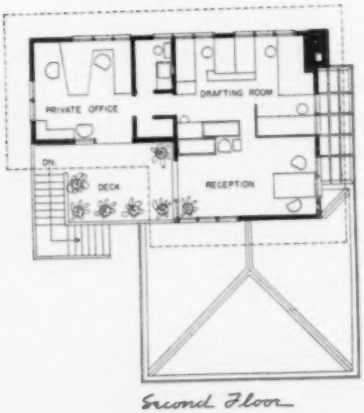
ROBERT MOSHER, ARCHITECT (MOSHER & DREW)

Here again, the scheme is a ground-floor rental unit with architects' offices above. The studied character of the design is consistent with a related group of commercial units, of which this is one element.

Right and below—details of the shop that occupies the ground floor.

Photos: Robert C. Cleveland


WORK ROOM
DELIVERIES
OFFICE
STOCK
PORCHES
STOCK
PRIVATE SHOW ROOM
SHOP
First Floor
Scale


PRIVATE OFFICE
DRAFTING ROOM
DN.
DECK
RECEPTION
Second Floor

LA JOLLA, CALIFORNIA

Bottom of facing page—the patio-deck leading to the architects' reception room and a detail of the latter looking back to the entrance. Rubber-tile flooring; partitioning of red cedar plywood; fir roof framing, painted flat, different hues in the three main rooms—apple green, chocolate brown, and a natural linen tone.

Right—view of drafting room. North windows, along left-hand wall frame a view of the ocean.

program A new building added to an informally arranged group of 1890 redwood board-and-batten structures that the architects have remodeled into a co-ordinated center consisting of six shops and a restaurant. As the old buildings are part of La Jolla's tradition, unusual care had to be exercised to maintain the spirit of the tradition, while developing a contemporary solution.

site In the heart of the town, running back to cliffs and ocean.

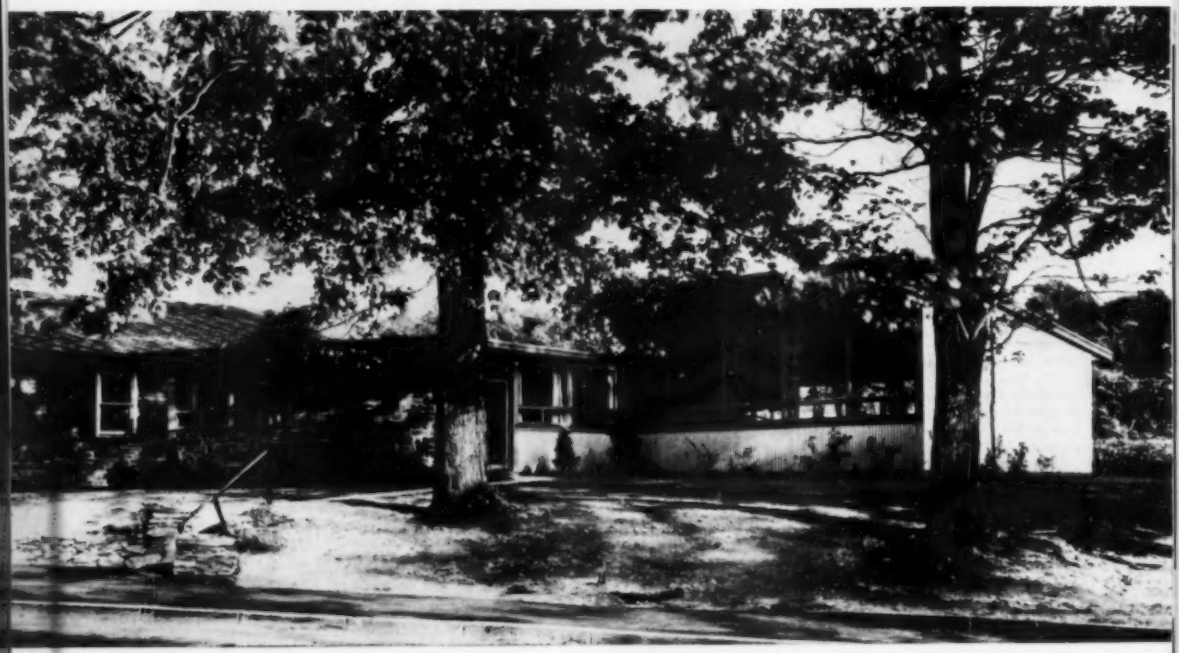
solution A two-story structure, with the display area of the shop projected forward in a one-story wing; stairs to the architects' offices lead up to an inviting patio-deck adjoining the firm's reception room. Redwood board and batten surfaces like those of the old buildings. In reply to a question regarding any disadvantage of a second-story location, the architects reply: "We feel that it is a real privilege to have so fine a spot . . .The view of the ocean is wonderful from our drafting room and actually draws our clients up."

materials and methods CONSTRUCTION: Reinforced concrete foundation. *Walls:* wood frame, surfaced outside with 1″ x 10″ and 1″ x 12″ redwood boards; inside (ground floor shop)—t & g redwood; office—red cedar plywood; stock and work rooms—putty coat plaster. *Floors:* wood joists and underflooring; carpeting, in the shop; rubber tile in stockrooms, offices, and toilets. *Roof:* wood frame, with cedar shingles over asbestos felt; redwood ridge and hipboards. *Ceilings:* (shop)—putty coat plaster; offices 1″ x 8″ t & g fir boards on fir rafters, all painted flat. *Insulation:* wool blanket. *Fenestration:* wood casements, with operators; plate glass. *Doors:* slab type, birch plywood.

EQUIPMENT: *Heating:* forced warm air system; natural gas fuel.

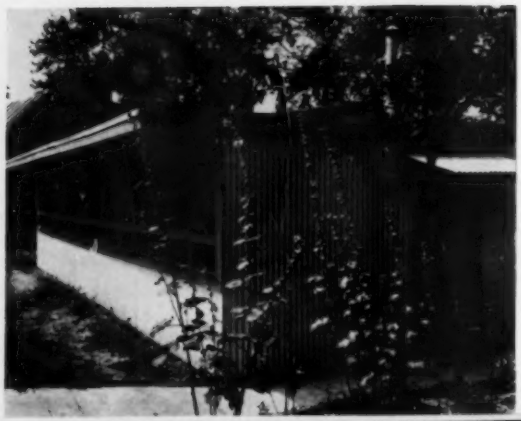
critique It is a difficult assignment for a contemporary designer to work within the framework of a vernacular; in this instance, it is our opinion that the two worlds were happily joined rather than colliding. Any temptation that may have existed to use applied "quaint" elements that are the vulgar hallmark of olde-worldinesse was assiduously avoided. Still, the desire to echo—distill, might be a better word—the spirit of the old neighborhood seems to have been achieved successfully. If exposure of all the roof framing on the upper floor is an obvious device, it must be said that here carpentry and good design sense have been wedded to produce a pleasing result. The plan of the architects' offices appears to be both logical and efficient.

Mosher



Syracuse, New York

SARGENT, WEBSTER, CRENSHAW & FOLLEY, ARCHITECTS



Top of page—general view from streetfront. Entrance and private offices at left, tall north windows of drafting room at right.

Center—detail of entrance

Bottom—rear wall of drafting room, with deep roof overhang for control of sunlight in south windows. Walkway leads back to ample parking space at rear of building. *Photos: Gilbert Ask*

program New offices for the firm's exclusive use, to be built beyond the downtown, high rental area, where there would be space for car parking adjoining the building. At the time of construction, the building situation was critical, with materials short in supply and high in price. A conscious wish was to have the structure serve as an advertisement for the office, as well as its workshop.

site Large, irregular-shaped plot some distance out of town, on south side of a main artery.

solution Building organized in a generally L-shape plan, angled so that taller windows of drafting room face due north; splayed end wall (waiting room-conference area) parallels the artery. Drafting room bilaterally lighted. Taller windows on north. Lower windows on south protected by structural sunshade. Unusual framing in this room resulted from local code prohibiting wood spanning more than 20′ whereas the drafting room needed to be 24′ deep. The structural span is kept to 20′ by means of angled supporting members sloped in to carry a concealed beam at the 20′ line.

materials and methods CONSTRUCTION: Cinder block concrete footing. *Walls:* wood frame (except for masonry at end of waiting-conference area), surfaced on the outside with corrugated, aluminum-painted gypsum board. *Roof:* wood frame; tar and gravel. *Insulation:* acoustical—ceiling tile; thermal—2″ batts and double-faced foil. *Floors:* 3½″ reinforced concrete slab over 3″ dry vermiculite on waterproof paper over porous fill; asphalt tile finished flooring. *Fenestration:* wood hinged sash; aluminum sill; polished plate glass. *Partitions:* wood stud; gypsum board.
EQUIPMENT: *Heating:* warm air system; oil-fired furnace; controls. *Lighting:* both incandescent and fluorescent.

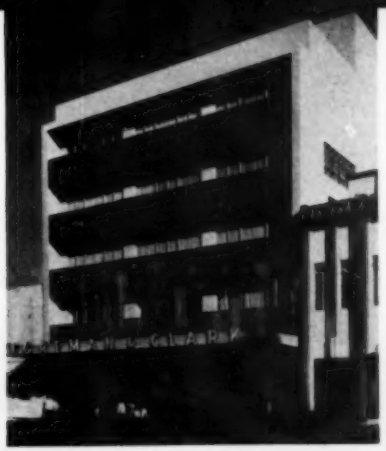
critique In plan, the organization of the various essential areas seems direct and sensible. Angle of the north wall of the reception room wing to bring it parallel the street appears a bit forced, particularly as it doesn't seem to assist the interior. The emphasis in both plan and elevation on the drafting room is agreeable, both design-wise and symbolically. The structural scheming, including the ingenious framing of the drafting room to cope with the local code, is straightforward and economical.

The partners (left to right): WEBSTER, FOLLEY, CRENSHAW, and SARGENT.

Below—left: front corner of conference room; right: detail of waiting room; scored plywood wall at right.

Bottom of page—drafting room, looking toward north window wall. The 2" x 4" lookouts meet the 2" x 4" vertical mullions in the windows to form a type of rigid frame.

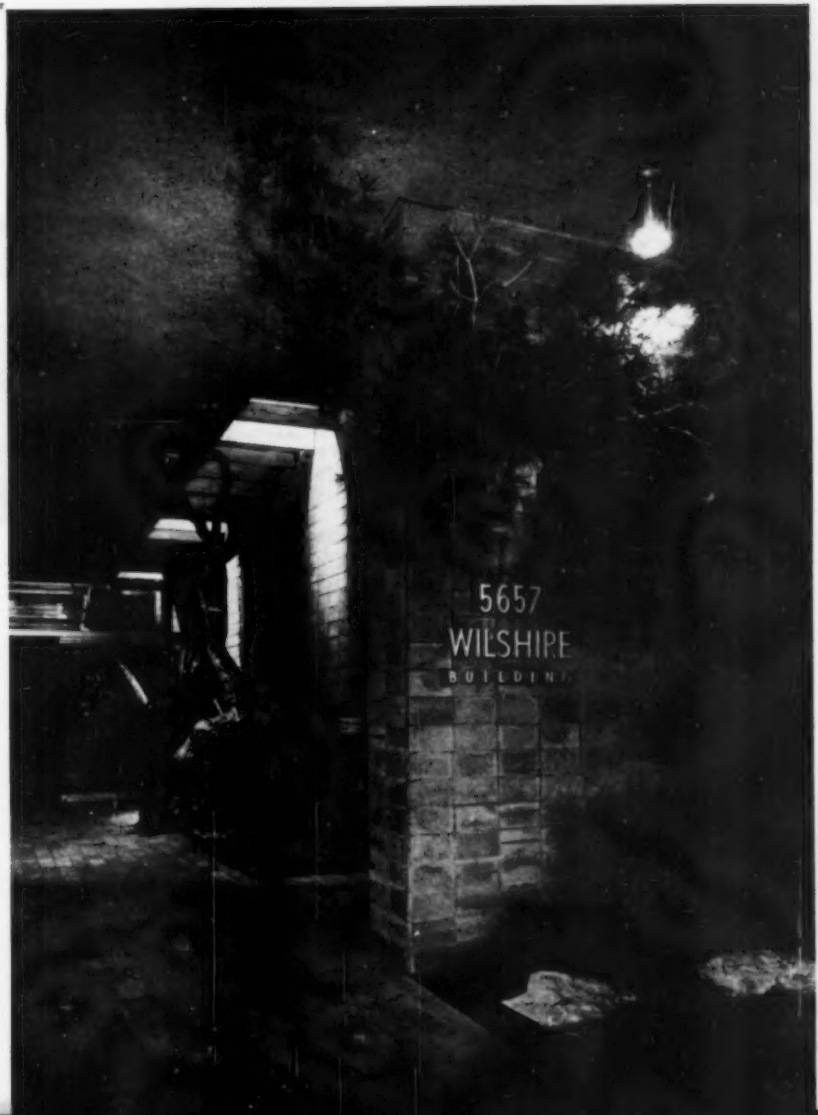
SYRACUSE, NEW YORK



Los Angeles, California

WURDEMAN & BECKET, ARCHITECTS

Architects' offices—top floor



Above—view of the reception area and skylighted garden patio, as one steps from the elevator. Floor is natural fire brick.

Right—looking toward patio from receptionist's desk. The partial screen for showing color transparencies consists of a grid of piano wires with two-part circular, wood, interlocking buttons at the intersections.

Below—detail of patio, with planting display in foreground. Behind the glass wall and hand-woven hangings at left is a conference-dining room where business or office luncheons are held daily. Motorized exterior louvers regulate the intensity of the skylighting.

Photos: Julius Shulman

LOS ANGELES, CALIFORNIA

Fifth floor plan

Scale 0 10 20 30

program To design offices for the firm (since Walter Wurdeman's untimely death. Welton Becket has been principal of the organization) on the top floor of a new building designed and owned by the firm; intermediate floors are miscellaneous offices, chiefly for leasing, and on the ground floor is a men's clothing store, also designed by the architects. Good north light was an essential of the program, and they wished the character of the offices to express the firm's distinctive design manner and the region where it is located. The firm especially requests credit to Campbell & Rightmire, general contractors.

site Mid-block site on the north side of Wilshire Boulevard.

solution General plan organization is around the reception-room-patio entered from the elevator; principal offices and conference rooms are along the front (south wall); secondary offices, specification room, model room etc., in a recessed central portion with side lighting; and the huge drafting room at the rear, with north wall lighting supplemented by a series of sawtooth skylights spanning the building.

materials and methods CONSTRUCTION: (applies to whole building): concrete foundations. *Frame:* steel. *Walls:* concrete, exposed outside, painted inside; (front wall—adobe brick). *Floors:* concrete over steel joists. *Roof:* wood decking over steel joists. *Insulation:* acoustical— cane-fiber tile on ceilings; thermal—glass-fiber roof insulation. *Fenestration:* steel and aluminum sash. *Partitions:* metal lath and plaster.

EQUIPMENT: *Heating* and *air conditioning:* Steam convectors and central fan units; gas-fired cast iron boiler; automatic controls. Belt driven piston type freon air-conditioning system. *Lighting:* fluorescent, incandescent and slim-line units, surface mounted.

critique An extremely self-confident, highly personal design expression. To the skin-and-bones purist, the elegance of texture, rich color, and such things as the bleached tree trunk surrounded by greenery and white orchid plants in the reception patio may appear fulsome, but the realist who recognizes that an aura of glamour is frequently a requirement in commercial design must admire the resourcefulness of the expression. Nor does this quality detract from the efficiency of the plan. Drama is less evident in the drafting room; here, emphasis goes to providing a superior workshop, with excellent natural light supplied from a story-and-half-high wall on the north end (see photo, page 59) and a series of interior skylights.

Becket

Above—Becket's own office. A wall of windows lines the southern front; the gray-blue acoustic plaster ceiling slopes up to a north skylight, with exterior, motorized louvers; calico ash is used on the huge cantilevered desk and low conference tables; the wall paneling is walnut; draperies are natural and gray-blue tweed, and the chairs are upholstered in sand and sulphur-yellow leather; hook-type carpet is sand color. In line with the firm's policy of "total design," everything was designed by the architects—furniture, fabrics, even carpeting.

LOS ANGELES, CALIFORNIA

Left—looking through patio glass wall to the conference-dining room, with Becket presiding at a staff conference.

Below—the north-lighted drafting room. Office personnel, including those in the newly opened San Francisco office, numbers almost 100.

Office Building: Houston, Texas

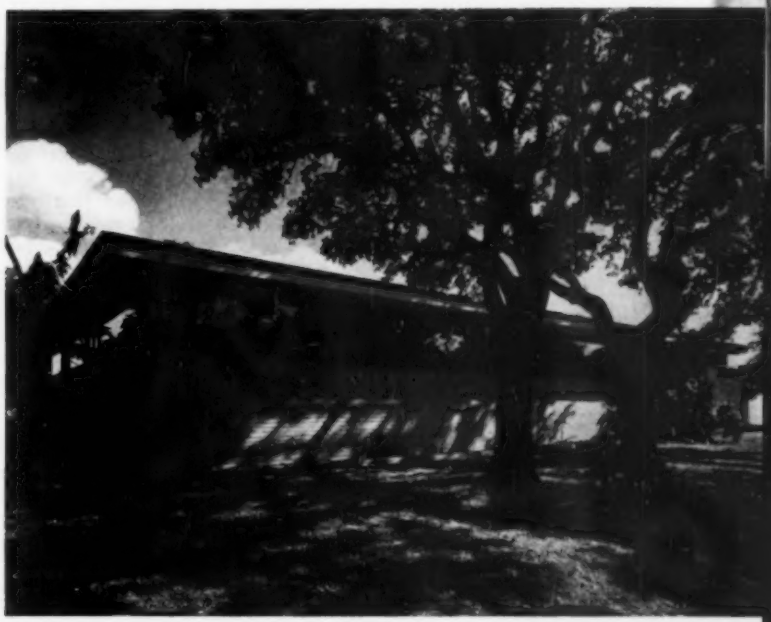
MACKIE & KAMRATH, ARCHITECTS

An office building for a company engaged in geophysical research and prospecting for potential oil and gas reserve, this structure has curtain walls of masonry or glass that are entirely free of the steel-column frame.

Above—street view.

Below—side view showing high, continuous strip fenestration in typical office areas.

Photos: F. W. Seiders



A landscaped walk in the court between the wings of the building leads to the employes' lounge.

program Headquarters—offices, work space, drafting room—for a seismic exploration corporation that sends out crews, under contract, to prospect for potential sources of gas and oil. No particular requirements other than proper work spaces, reception room, and an employes' lounge. As the architects say, "it was essentially a problem in functional planning . . . the exterior is merely a direct expression of the plan."

site Uncomplicated, flat site, with several handsome live-oak trees; north side of street.

solution Offices arranged around the outer perimeter of a U-shaped plan, with one side of the U facing the street and including the reception room; employes' entrance occurs in the court between the wings and opens into an employes' lounge. Minimum construction time—to escape the delays of winter rains—was essential; hence, slab roof (of high, early-test cement) was erected on steel columns as soon as possible; shoring was removed within six days and construction below continued without interruption. Daylighting comes from high, continuous-strip windows, protected from weather and sky glare by the roof projection; thus walls of offices below the window band may be used for file storage and furniture. The building is year-round air-conditioned.

materials and methods CONSTRUCTION: *Foundation:* concrete. *Frame:* 3″ steel pipe columns, 12′ o. c., resting on concrete footings. *Walls:* local concrete tile (8″ deep; 12″ long and 2¼″ high) exposed on the exterior, with plaster surfaces indoors. *Floors:* 4½″ reinforced concrete slab, free of the exterior grade beam and column footings, asphalt tile; carpet. *Roof:* 6″ reinforced concrete slab; built-up tar and gravel roofing. *Insulation:* 12″ x 12″ tile on ceilings; batt-type thermal insulation. *Fenestration:* steel sash; ¼″ plate glass; casement ventilating sash in each bay. *Partitions:* plaster on metal lath on 2″ channels; metal toilet partitions. EQUIPMENT: *Heating:* warm air; natural-gas-fired furnace; aluminum ducts; controls. *Air conditioning:* electric unit; freon; multi-shutter type grills; hard drawn copper tubing; controls. *Lighting:* fluorescent type; floodlights. *Special equipment:* 30-gal. gas water heater; 2″ copper water piping; steel-tube wiring conduit; electric kitchen unit; telephone-type intercommunication system.

Detail of front entrance area and (at right) a corner of the reception room, looking back through the big plate-glass window. The long, horizontal concrete wall tile is a local product.

OFFICE BUILDING: HOUSTON, TEXAS

The lounge and side-door entrance to the building. Asphalt tile surfaces the concrete floor slab.

OFFICE BUILDING: HOUSTON, TEXAS

The carpeted, main reception room, with curtains drawn across the west window. Acoustic tile on the ceiling.

scottish contemporary furniture

Architectural men designed the furniture being marketed internationally this fall by Scottish Furniture Manufacturers, Ltd., a corporation formed by leading furniture makers of Scotland to produce a contemporary line. The most knowing British designers, almost all of them architects before they turned to this field of practice, were commissioned to create furniture for six rooms of a house, plus an office. The line was first shown at the recent British Industries Fair, in room settings enhanced by textiles and accessories from Scotland's leading factories.

A corner of the library (above) shows a bookcase of Australian walnut with upright "ladders" supporting shelves and various storage units, which can be readily rearranged. Frame and legs of the wing chair are mahogany; plywood upholstered seat is covered with Tartan. Both were designed by R. D. Russell and Robert Godden, who were trained at Architectural Association and now are practicing as consultant designers. Overpage are pieces designed for other rooms. The

mahogany furniture (above) is by Jacques Groag, architect trained at University of Vienna who practiced on the continent and in England before he became interested in utility furniture. The chairs, which can be put together as a sofa, are covered with a Glamis fabric. The top of the coffee table is sycamore veneer. The record and magazine storage unit of pearwood (right, below) was designed by Neville Ward and Frank Austin. Ward received his architectural training at Liverpool School of Architecture and Edinburgh College. He has practiced since 1948 with Austin, who was trained as a furniture and interior designer in Germany. *Photos: R. H. de Burgh-Galwey*

Courtesy of Scottish Furniture Manufacturers, Ltd.

House: East Greenwich, Rhode Island

IRA RAKATANSKY, DESIGNER

Planned for a minimum of housekeeping, this small two-bedroom house has exterior wall surfaces of scored plywood—painted white on front and rear walls; chocolate brown, on the side walls.

Above—general view from the southeast.

Below, left—the southern end of the house; below, right—detail of western terrace.

Photos: Richard Garrison

Flagstone flooring in entire main living area of house (main passage at left and living room below and across-page) plus radiant heat in the floor slab makes it possible to clean the house "in less than an hour."

program An easy-to-maintain house having two bedrooms, a living room with dining area, a kitchen, and a bath.

site A 75′ x 100′ corner lot. Space for future garage and enclosed storage room.

solution Compact plan, within a simple rectangle; central entrance; main living space organized around an interior boiler-service room; two bedrooms and bath at right of passageway. For efficient housekeeping, slate flagstone is used for flooring in the living space, bath, and kitchen; asphalt tile in the bedrooms.

materials and methods CONSTRUCTION: *Foundation:* concrete. *Frame:* wood. *Walls:* wood stud, surfaced on the exterior with ⅜″ waterproof, scored plywood (painted); inside, with hard lime plaster, except in the bathroom (scored plywood) and the boiler room (asbestos cement board). *Floors:* concrete slab, surfaced with either flagging or asphalt tile. *Roofing.* tar and gravel over wood rafters and decking. *Insulation:* 1″ board type in roof; aluminum reflective material in the walls. *Fenestration:* steel sash; plate glass.

EQUIPMENT: *Heating:* radiant system in floor slab; copper tubing; oil fuel; controls. *Lighting:* both incandescent and fluorescent.

the designer *Ira Rakatansky:* Rhode Island School of Design; B. Arch., and M. Arch., Harvard Graduate School of Design. Work in the offices of Marcel Breuer and Samuel M. Morino.

Above—looking from dining alcove to western side of living room; three tiers of operable sash at right of door permit controlled ventilation.

Left—view toward north end of living space, showing (at right of sofa) a storage unit that screens the bedroom area.

HOUSE: EAST GREENWICH, RHODE ISLAND

Above—view from living room, through dining area to kitchen (photo at right), at the front of the house.

Owners' bedroom, with wall of storage units at right. All interior door openings extend from floor to ceiling, resulting in one continuous ceiling plane throughout the house.

Chimneys to Burn

By ROBERT H. EMERICK*

The basic design rules for a successful chimney are these:

Give it height.
Give it girth.
Keep it straight.

Three rules in nine words. They are such simple rules that we never break them, even in a pinch. We just go around them.

Probably the most common circumvention of the height precept, is to build a shorter chimney with greater girth. Unfortunately this plan, unless prechecked with great care, can lead us into the situation that we shall examine as Clinical Case No. 1.

clinical case no. 1

In this case the boiler was of the sectional header type, rated for 7400 square feet of equivalent direct radiation. For convenient access to the oil burner, the front faced the chimney, thereby making necessary a long breeching and one 90 degree elbow. As the flue gases entered the chimney (which was requested by the boiler builder to be 60 feet high and 20 by 24 inches inside diameter), they made another 90 degree turn. These bends are important because they inject a draft loss between the boiler and the chimney of 0.05-inch water gage per bend.

At this point, a study of the architectural spirit of the building indicated that a 60 foot stack was absolutely unacceptable.

Some thought was given to disguising the chimney as a carillon or clock tower, but this project had no money for music and no need for an outdoor clock; consequently, it was decided to shorten the stack and make up for the amputation by increasing the cross-sectional area. The height was reduced to 45 feet, the girth expanded harmoniously, and the streamlined results satisfied everybody but the boiler. This dour and uncompromising apparatus promptly set off a series of flarebacks, puffs, and, ultimately, a firebox explosion that came perilously close to wrecking the building.

To understand the reason for these untoward results, suppose we evaluate in figures what cutting off 15 feet of stack actually did to that boiler's combustion needs. The first step is to calculate the reduction in draft, using the formula:

$$D = 0.52 \times H \times P \left(\frac{1}{T} - \frac{1}{T_1}\right)$$

D = The theoretical draft, inches water gage.
H = Height of chimney, in feet.
P = Atmospheric pressure in pounds per square inch, in this case, 14.7, the sea level value.
T = Absolute temperature of the atmosphere.
T_1 = Absolute temperature of the flue gas.

At the time of the major firebox explosion, the ambient temperature was 40F, and the flue gas temperature at the boiler outlet approximately 600F. By changing these temperatures to their absolute values and setting them in the formula, we have:

$$D = 0.52 \times 60 \times 14.7 \left(\frac{1}{500} - \frac{1}{1060}\right)$$

And the draft generated by the 60 foot chimney is 0.485" water gage.

Now if we reduce the chimney height by ¼, we reduce its draft generating capacity ¼ also; consequently, the 45 foot stack could produce theoretically only 0.364" water gage, at the time of the explosion.

This draft must overcome the frictional resistance of the boiler, the breaching, and the chimney itself, plus all the bends. The boiler resistance is available from the boiler builder, and is rarely less than 0.25" water gage at full load; in fact, many may show as much as 0.40".

In this case, if we assume a boiler loss of 0.25" and then add 0.15" for the three changes in direction that the flue gases must make (1, as they leave the boiler; 2, in the breeching; and 3, to enter the stack), we already have a resistance in excess of the draft being generated, with the breeching and chimney friction yet to be calculated.

Obviously, a 45-foot chimney is too short, regardless of its girth.

Now let's see what happens in the firebox, when the draft is inadequate.

A pound of oil with good combustion, which means about 20 percent excess air, will require approximately 17 pounds of air. This air mixes with the atomized oil at its entrance temperature of, say 60F, and its volume at this temperature is 13.1 cubic feet per pound. Then ignition takes place, and the temperature jumps all the way to 2500F or even higher, which causes our 13.1 cubic feet of

* Consulting Mechanical Engineer, North Charleston, South Carolina.

Table No. 1 Minimum Flue Sizes

Capacity Connected Steam Radiation In Square Feet	Inside Min. Dimensions Round Inches	Inside Min. Dimensions Rectangular Inches	Effective Flue Area In Square Inches	Outside Dimensions Of Chimney
590	10	8½ x 13	70	17 x 21
690	10	13 x 13	78.5	20 x 20
900	12	13 x 13	100	21 x 21
1100	12	13 x 17½	113	21 x 26
1700	15	13 x 17½	150	21 x 26
1940	15	17½ x 17½	177	25 x 25
2130	15	17½ x 17½	183	26 x 26
2480	18	20 x 20	234	23 x 23
3150	18	20 x 24	254	33 x 33
4300	20	24 x 24	314	39 x 39
5000	20	24 x 24	346	40 x 40

Note: for a gas fired boiler, a safe rule for sizing vent flues is this: allow 1 square inch of cross-sectional area for each 6500 Btu of *input* to the *furnace*.

For example, $\frac{4300 \times 240 \text{ Btu}}{0.8 \times 6500} = 200$ square inches. The *input* is based usually on an American Gas Association recommended efficiency of 80%, which has been applied in the above example.

air to swell to 75 cubic feet, or 1275 cubic feet per pound of oil.

Obviously this sudden expansion must go somewhere, and if a weak chimney draft is further hampered by bends and a lengthy breeching, we may experience anything from a gentle puff to a violent explosion.

Friction in the chimney and in the breeching may be calculated from the formula:

$$\triangle D = \left(\frac{f \times W^2 \times C \times H}{A^3}\right)$$

$\triangle D$ = Draft loss in inches of water.

f = a friction factor that may be developed from the Reynolds number. Since flue gases are normally in the zone of turbulent flow, most of our problems may be solved if we use these values for f:
.0015 for steel surfaces, gas at 600F
.0011 for steel surfaces, gas at 350F
.0020 for brick chimneys, gas at 600F
.0015 for brick chimneys, gas at 350F
Interpolate for intermediate temperatures.

W = Weight of gases passing, in pounds per second.

C = Perimeter of stack or breeching, in feet.

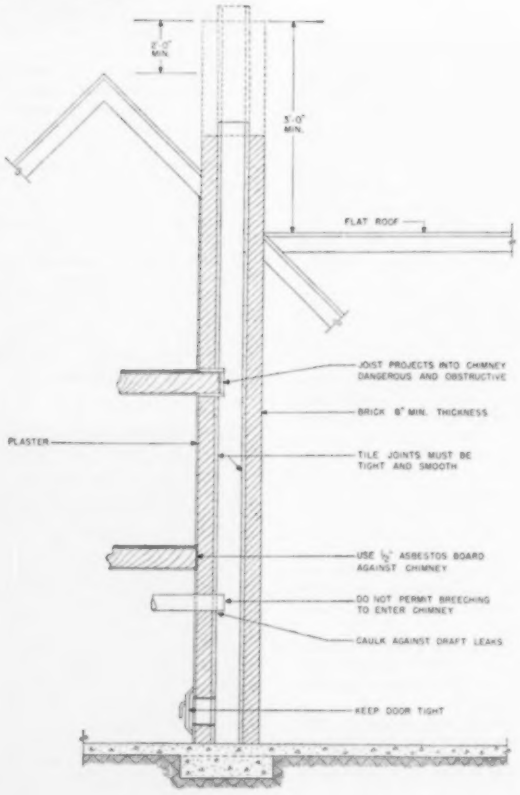
H = Height of chimney, or length of breeching.

A = Cross sectional area in square feet.

how to get around high chimneys

Since Clinical Case No. 1 illustrates how *not* to circumvent a high chim-

Figure 1: construction items.


2'-0" MIN.
3'-0" MIN.
FLAT ROOF
JOIST PROJECTS INTO CHIMNEY DANGEROUS AND OBSTRUCTIVE
BRICK 8" MIN. THICKNESS
PLASTER
TILE JOINTS MUST BE TIGHT AND SMOOTH
USE ½" ASBESTOS BOARD AGAINST CHIMNEY
DO NOT PERMIT BREECHING TO ENTER CHIMNEY
CAULK AGAINST DRAFT LEAKS
KEEP DOOR TIGHT

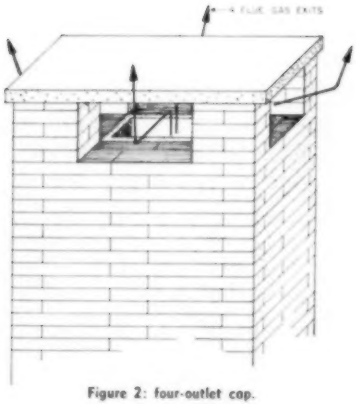


Figure 2: four-outlet cap.

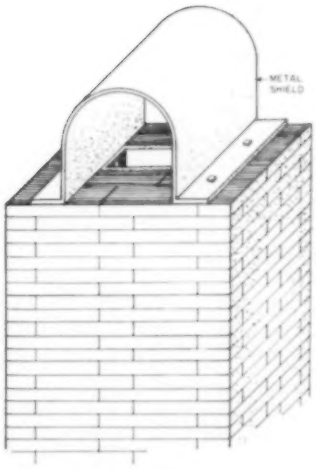


Figure 3: two-outlet cap.

ney, suppose we consider the alternatives that really work.

The first recommendation is to install a fan. Either an induced draft fan or a forced draft fan is worth many feet of chimney height. By starting the fan automatically, immediately prior to ignition, we avoid puffs and explosions. This is the major alternative.

Our second step is helpful but not an alternative. It consists of properly insulating the breeching, thereby maintaining some measure of heat and natural draft, even with ignition shut off.

The third step is a relative of the second. It requires us to shorten the breeching as much as possible, and to eliminate every bend that we can.

In some cases, and providing the shortened stack leaves the situation on a ragged edge, we can smooth off that edge by means of steps 2 and 3, by increasing the girth of the chimney, and by selecting a boiler with a very low draft loss. The combination may suffice, but a careful evaluation of all losses is essential.

clinical case no. 2

In this case, the unhappy installation resulted from insufficient cross sectional area in the flue. The boiler was a coal burning, hand fired, residential steamer that, according to the boiler builder, required an 8" x 12" flue. The chimney was built with an 8" x 8" flue.

There are three reasons for a chimney being too small: 1) an attempt is made to save on construction cost; 2) the chimney is faired into a wall or an inadequate corner; 3) the boiler loss is greater than expected.

Chimneys that are too small are almost never rebuilt; we are obliged, therefore, to consider other curative treatments. In Case No. 2, satisfactory operation was obtained by the simple expedient of changing the fuel from coal to coke, thereby reducing the weight of flue gases for the chimney to handle. Equal results would have followed if the switch had been made to gas, but gas firing required a capital investment in equipment plus some changes to the boiler, two factors that made the simple action preferable.

Another alternate of course, is to install a fan, and if the residence is small or medium, the fan treatment is neither expensive to initiate nor expensive to maintain.

The perfect treatment, however, is to avoid building too small a chimney in the first place. Table 1 indicates the minimum flue sizes that are recommended by the National Board of Fire Underwriters. Give our chimneys these girths, and we build on safe figures.

the need to keep it straight

Offsets in a chimney are direct destroyers of draft. They accomplish this undesirable effect by introducing frictional resistance without generating enough, if any, compensating afflatus. In short, they become more or less horizontal breechings by nature.

If we have two or more flues in a single chimney and *must* introduce offsets somewhere, we should keep the main heating flue straight and offset another, meanwhile attempting to keep the offset section as short and as close to the vertical as we can.

A secondary draft loss develops as the flue gases are forced to change direction, both on entering the offset and in leaving it, thus introducing another fly in our flue.

A corollary to the need for straightness, is the need for cleanliness. In this reference, cleanliness does not primarily mean elimination of birds' nests, bats, soot, and similar destroyers of draft. What it does imply is cleanliness in construction: the settings of smooth tile with tight, slick joints; the avoidance of projections into the chimney. It means, too, the exclusion of parget (or parge) mortar as a finish for the flue walls in place of tile. This mortar is attacked by moisture and acids, and in time it spalls and cracks.

Figure 1 illustrates some of the things that can happen to a chimney in construction; at the same time it emphasizes certain safety features that are sometimes overlooked.

the case of the steadfast cap

Clinical Case No. 3 concerns a sturdy steel chimney cap that steadfastly refused entry to all the storms that blew, at the same time refusing, with equal steadfastness, to release the full volume of the products of combustion. Since this was a fireplace case, the baffled products stampeded into the living room, where the harried owner tried every palliative treatment known to man except the

obvious one of removing the cap. He had been told that the cap prevented down-drafts (which it does within reason), and since the smoke was visibly emerging on the wings of a back-draft, the cap apparently was merely unable to cope with extreme conditions.

This cap is shown in Figure 2 and its trouble is not in principle, but in execution. The clear openings under any cap should be equal, in their total area, to *four* times the cross-sectional area of the flue they serve. This cap actually provided less than twice the cross-sectional area of the flue.

Chimney pots, like caps, perform useful service in preventing the entry of rain and snow to a chimney. On the other hand, these shapes definitely restrict draft. One manufacturer numbers this characteristic among the assets of his contrivance: he claims it eliminates excessive draft and thereby saves fuel. We grant this to be a useful feature, but only until the pot begins to encroach on the necessary draft, at which time we should remove the pot and install a barometric draft regulator in the boiler breeching.

In one instance that we might designate as Clinical Case No. 4, a chimney pot of unusually handsome mien persistently provoked an oil burner at the other end of the chimney into lighting off with sharp but harmless puffs. When asked to choose between the chimney pot and the ignition puff, the owner said, "I'll keep the pot and endure the puff."

down drafts and their treatment

Tall chimneys are exempt from down drafts, as the strong up draft is sufficient to turn away these wrong-way currents of air.

The comparatively low, and sometimes yawning openings of domestic chimneys, however, are frequently helpless against the swirls that descend from adjacent trees, buildings, and hillsides. A common solution to this problem is to use a wind cowl which swings as the wind swings, and allows the flue gases to emerge without conflict.

Although generally effective, the pipe and cowl treatment does not contribute beauty to a structure. Alternatively, we might try a few extra feet of chimney, if the addition can be made harmoniously. These additional feet may provide sufficient extra draft to compensate for the installing of a chimney pot, and if so, the pot will be found quite effective against the down drafts.

If the draft is doubtful, then we can go to a cap, being careful to set the cap with its escape openings equal in area to four times the cross-sectional area of the flue.

Should we reject each of these prerogatives, then we can erect one of the patented exhausters, or install a draft fan. In the final decision, how we defeat down drafts depends on our willingness to accept expense, and on our requirements for design effect.

the chimneys that hang from above

In the modern small houses, where every foot of floor area is precious, and construction dollars are weighed to the last mill, the new hanging chimneys are helping to relieve both of these problems.

As shown by Figure 4, these hanging flues are built with a fire tube of enamel-coated steel, or of a cement and asbestos composition. The fire

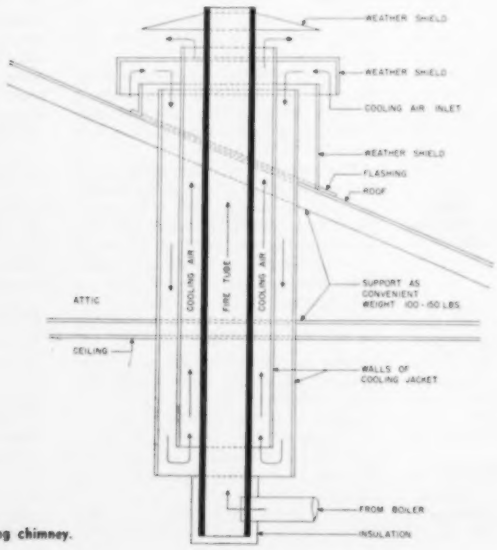


Figure 4: hanging chimney.

tube is encased in a double-walled jacket of galvanized steel or aluminum, the 1" air spaces between the jacket walls serving as passages for the cooling air that is circulated by natural draft.

These chimneys, approved by the Underwriters' are hung from the building structure above the boiler; each is in effect an attenuated form of the conventional roof thimble long used to convey hot stacks through combustible roofs.

How well these hanging chimneys will last in service is a question that likewise is hanging in air, and will continue to hang until time provides an answer. But the idea is a good one, and as such, is here to stay.

chimneys versus firing equipment

In Clinical Case No. 5, a boiler chimney was smoking so badly that it annoyed the entire neighborhood; the boiler was having trouble to carry the load, and the ashes were full of coal.

This was a stoker-fired boiler, and a check of the firing rate discovered the trouble at once: the stoker was heaving coal into the furnace too fast for the furnace and draft conditions to handle. In short, the stoker was too large for the remainder of the combustion system.

Occasionally firing equipment is oversized in an attempt to equip the boiler for all possible conditions, including some nebulous, future load. Unfortunately this commendable intention is too often restricted in action to the firing equipment, and the chimney and boiler in consequence are overloaded. If we install oversize stokers, or grates, or oil burners, then we must carry the oversizing to the chimney also; it is the road to satisfactory operation.

In the clinical case described, the cure involved the removal of the stoker and its replacement by an oil burner. This procedure cleared the furnace of grates, air retorts, and other clutter, and the increase in usable furnace volume was enough to produce good combustion with the oil, and achieve a clean and satisfactory chimney.

The moral of this case is: when specifying firing equipment, think of the chimney first. Then design a chimney to burn.

A Check-off Guide to Chimney Design

1—What draft will be generated by the proposed chimney height?

2—What is the total friction and draft loss produced by:
- (a) The chimney flue at full boiler load.
- (b) The boiler breeching at full load.
- (c) Changes in direction by the flue gas flow (.05" per 90° elbow).
- (d) The internal passages of the boiler. (Obtain from boiler manufacturer.)
- (e) The fuel bed if coal is being burned.

3—If losses exceed draft generated, check curative treatment decided upon:
- (a) Installation of a fan or blower.
- (b) Extension of chimney.
- (c) Shortening and straightening of breeching.
- (d) Increase of cross-sectional area of flue.
- (e) Change of fuel or firing equipment.

4—If draft exceeds losses, check off control equipment proposed for use:
- (a) A barometric damper.
- (b) A chimney pot

5—Check off adequacy of proposed chimney dimensions against:
- (a) Boiler manufacturer's recommendations.
- (c) Firing equipment capacity.
- (d) The published code of the National Board of Fire Underwriters.
- (e) Local smoke ordinances. Some cities exercise jurisdiction over chimney sizes.
- (f) Federal Housing Administration requirements if federal funds are involved.

6—Will the assigned location of the chimney subject it to blanketing from adjacent structures?

7—Will the proposed location and height of the chimney contribute a nuisance to neighboring buildings?

8—Do the specifications call for a tightness test before acceptance?

Interior Wall Materials for Residences, PART 2

By GROFF CONKLIN

In the selection of materials for the inner walls of a house—not, however, for their finish, since this review is not concerned with paints or wallpapers—the architect has an important function vis-à-vis the home-building client, whether he wants a house for himself, or is building a large subdivision. Few are the clients of whatever type who have the time, the desire, or (dare we say) the intelligent patience to want to analyze the various performance qualities of materials, and to evaluate them, first in terms of original cost versus maintenance costs, and second in terms of performance versus appearance.

Unfortunately, few architects have heretofore been able to give the necessary time to such a study. The net result has been that materials, and particularly wall materials, have more often than not been selected on purely subjective basis: popularity, advertising claims, conventionality, custom, price, immediate availability, or even personal friendship with the distributor of the material in question. However, in view of the marked differences in performance between the various types of materials, it is extremely important for the architect to know something of the nature of each material so that he can judge its usefulness in any situation he may be confronted with.

It is as a consequence of this situation that the following data on materials is perhaps fuller and more detailed than ordinarily would be considered necessary. Some of the facts will seem to some of the architect-readers of this review to be "common knowledge"; but the intention here is to present an essentially complete, brief guide to wall materials, even though some of the facts may seem obvious and trite. This guide is organized in terms of the standards outlined in Part 1 of this article, and also considers the various materials as components of more complex wall cross-sections to which each of several materials may add their own peculiar qualities.

types of wall materials for walls and partitions inside the home

In brief, interior wall materials fall into two major classes and several subclasses. The two major divisions are, of course, the wet wall and the dry wall; the plastered wall versus the wallboard wall. Plasters may include standard gypsum or lime materials with or without a finished lime white coat, portland cement plasters, and stuccos. Exposed masonry walls sometimes are used as an inner as well as an outer surface, and they then may be said to fall between the two classes: part, the brick or block, is dry and another part, the mortar, is wet. Among the dry wall materials are gypsum wallboards, vegetable fiberboards of both insulating and noninsulating types, plywoods and solid wood panels, various types of masonry, and single thickness walls such as Durisol, Cemesto, and Kaylo.

Plaster laths, as analyzed in this review, include only the gypsum lath and insulating fiberboard lath. Wood laths are so rare today in most parts of the country as to be nearly obsolete. Metal laths, while essential as a base for bathroom tiles set in portland cement and certainly effective as a base for any type of plaster, are so much more expensive than the gypsum lath, both as a material alone and as a user of up to twice as much plaster as the gypsum or insulating fiberboard materials, that they cannot compete in ordinary residential construction. This is true despite the fact that, according to the National Bureau of Standards, they result in a wall which is much less prone to cracking than one built with a gypsum or fiberboard lath, and that a metal-lathed wall has a fire resistance factor which is somewhat greater than that of one lathed with gypsum.

Despite these factors, metal lath is uneconomical for any building situation where gypsum or fiberboard lath can be used. This is not, of course, to say that metal lath should not be used in residential construction. It is perfectly satisfactory when so employed. The fact is simply that it is not an economical material when placed in a wood frame structure.

Presented below is a summary of the various wall materials commonly used in residential construction and discussed in this review:

- Gypsum wallboard and lath
- Insulating fiberboard and lath
- Noninsulating fiberboard
- Hardboard
- Plywood
- Solid wood panels
- Asbestos cement wallboard
- Single-thickness dry walls, such as:
  - Masonry
  - Glass block
  - Durisol
  - Cemesto
  - Kaylo laminated panels
- The plasters.

gypsum wallboard

Gypsum boards (and lath as well) are made from a composition of fibrous gypsum (hydrous sulfate of lime) and other materials pressed into sheets and faced on both sides with thin, strong paper. The gypsum core is incombustible, and the paper facings are so thin that they present little or no fire hazard. However, these boards have an extremely low insulating value ("C" equals 2.60 for the ½" board), so that insulation must be placed between the studs and the ceiling joists or attic rafters wherever the home is exposed to severe winter climates.

For dry wall application, gypsum boards ⅜" and ½" thick, 48" wide, and from 6' to 12' long are available. The edges are recessed, so that the joints between the boards can be concealed by pressing a thin, strong cloth tape set in in a plaster spackle compound into the recess, and covering it with a neatly-feathered coat of the same spackle. Gypsum dry wall constructions are of two types: a single ½" thick gypsum board, or two layers of ⅜" boards, the first of which is nailed to the studs and the second glued over the first. The latter type of installation is of course more expensive than the former, but it also is more stable and resistant to cracks and joint separations due to the shrinkage of the framing members. The double-thick dry-wall gypsum wall is competitive with regular lath and plaster in most parts of the country.

A ½" gypsum dry wall on wood studs has, according to the Bureau of Standards, a 40-minute fire resistance rating, thus nearly meeting the fire safety standard set forth previously, which is ¾ hour. When applied over an incombustible (mineral wool) fill insulation, the rating rises to 45 minutes; over mineral wool batts nailed to the studs a one-hour rating is achieved. All types of application, therefore, meet or nearly meet the minimum fire safety standard.

Unfortunately, the Bureau of Standards has not published acoustical insulation tests for a gypsum wallboard wall on wood studs, so that accurate data on this aspect of its performance cannot be presented here. It probably does not meet the 40-decibel sound transmission loss standard described previously, at least in the single thickness, ½" installation. The performance of gypsum lath and plaster as acoustical insulation is given later on in this review.

Data on the strength of a gypsum wallboard wall is also unavailable at this time, but there is no reason to believe that it would not meet any standards established for residential construction. Certainly it is acceptable from the point of view of sharp impact resistance (hammer blows, picture nail tearing), since the paper covering is extremely strong.

Gypsum wallboard, like any inorganic material, is proof against decay and also against attack by termites, other insects, and rodent attacks. It will, however, deteriorate if constantly exposed to moisture. Consequently it must at all times be protected against exposure to exterior elements or interior leaks.

gypsum lath

This most commonly used plaster base is available, as everyone knows, both in plain and perforated styles. The perforated lath usually costs no more, and is to be preferred at all times to the plain, since the Bureau of Standards fire tests show that it adds roughly 15 minutes to the wall's fire resistance rating because of the stronger bond made between the lath and plaster. A plain gypsum lath and plaster wall rates 45 minutes; a perforated gypsum lath and plaster wall rates one hour.

As remarked above, no gypsum or lime products have any thermal insulating value to speak of. Some unperforated gypsum laths are being offered currently with an aluminum foil on the back. It is claimed that the foil insulates the board and acts as a vapor barrier. Neither claim is well founded. No vapor barrier is effective unless it is continuous. Vapor will penetrate between the joints of the gypsum lath, unless added sheets of foil are placed behind the joints, which is a difficult and very costly operation. Whenever conditions are severe in the winter, the vapor passing through the wall will condense on the studs or the outer sheathing, and eventually, perhaps, cause rot and paint failure.

The foil-backed gypsum lath has negligible insulating value, too, for aluminum foil does not insulate unless there is at least $\frac{3}{4}$" of air space on the side facing toward the heat source, through which the heat can be reradiated back toward the source. The foil backing probably will serve to keep the house somewhat cooler in the summer, since there usually is some air space between the back of the lath and the sheathing or the insulation, but it is of no value in conserving heat during the winter, since the foil is laminated to the lath and there is no air space at all.

When gypsum lath is nailed directly to the studs and plastered, an acoustical efficiency of roughly 39 decibels sound transmission loss is achieved—just about the minimum standard of 40 decibels. However, if the laths are fastened with broad-headed nails hammered between rather than through the pieces, the decibel reduction efficiency reaches a 45-decibel rate; and if they are attached with certain types of spring clips, it rises to nearly 52 decibels. In all instances the plaster is $\frac{1}{2}$", three-coat gypsum and lime.

Though a gypsum lath-and-plaster wall was not tested by the Bureau of Standards for strength, there can be no doubt of its meeting the necessary strength requirements. Pragmatic experience over many years has proven that.

vegetable fiberboards

Three types of organic fiberboard are commonly available today: insulating boards and lath, low in density and light in weight; medium density boards, unsuitable for use as lath, heavier than the first type, and of not quite as high an insulating value; and the hardboards, dense, tough materials, as hard or harder than most woods, and (when specially tempered) sufficiently waterproof for use as low-cost sink tops and for other water-resistant purposes. Hardboards, too, are not suitable as plaster bases.

Practically all of these boards are made from pulped or chopped wood fibers, chemically treated in various ways. The exceptions most frequently found today on a national distribution basis are Celotex, which is made from bagasse, or sugar cane fiber, and Homasote, Upson Board and Beaver Board, all largely or entirely made from repulped waste paper. Boards made from other vegetable fibers such as palmetto, corn stalks, licorice roots, and so on, may be available in certain localities, but none of them is at present distributed nationally, and none has been examined during this study.

Insulating vegetable fiberboards are made of loosely compressed fibers felted into sheets of thicknesses ranging from $\frac{3}{8}$" to 1". The $\frac{3}{8}$" thickness is usually called a "utility" or "thrift" board, and is not used as a substitute for any of the standard insulations. The $\frac{1}{2}$" boards are called insulating wallboards or lath, weigh about 0.7 pounds per square foot, and are available in a number of sizes and shapes, such as ceiling tiles, wall planks, and standard 4' wall panels, the latter two coming in various lengths. Planks and tiles usually are factory prefinished; panels are available both finished and natural.

The 25/32" insulating boards are used for sheathing, and are manufactured only with some sort of asphaltic treatment, either integral or surface, which adds to their weatherproofness. One-inch boards are simply two $\frac{1}{2}$" boards laminated together; they are used when a greater insulating efficiency is desired.

All ten of the leading brands of insulating fiberboard are practically identical in physical qualities and in forms available. Consequently the summary of performance qualities given below applies, within very narrow ranges, to every standard insulating fiberboard on the market, no matter what the brand name.

The great appeal of the insulating wallboards is their dual function: they not only serve as an interior wall finish, but also, when used in combination with the 25/32" insulating fiberboard sheathing, as fairly adequate insulation for the walls of homes built in all but the most severe climates. According to data in the Housing and Home Finance Agency's *Manual on Wood Construction for Prefabricated Houses*, a wood frame house with $\frac{1}{2}$" insulating wallboard and 25/32" insulating fiberboard sheathing and yellow pine lap siding will develop roughly 0.157 as a "U" factor. This means that the wall has a heat loss of 0.157 Btu per square foot of wall area per hour per Fahrenheit degree difference between outside and inside temperatures. A frame house using gypsum lath and plaster on the inside, 1" of mineral wool insulation between the studs, and 25/32" wood sheathing, building paper, and yellow pine lap siding on the outside, develops a "U" factor of 0.128. Thus the insulating fiberboards when used both as wallboard and as sheathing, do provide insulation at least in the same general range of efficiency as a 1" mineral wool batt. The uninsulated frame wall used as a guinea pig in these studies had a "U" factor of 0.243, which is about the kind of heat loss experienced in wooden houses previous to the development of insulating materials.

As far as fire safety goes, the insulating wallboards are of practically no value whatsoever. Bureau of Standards figures for walls covered with fiberboard weighing 0.7 pounds per square foot of $\frac{1}{2}$" material indicate an ultimate fire resistance rating of only ten minutes. The combustibility of these boards can of course be reduced by lining the studs and ceiling joists against which they are to be placed with heavy asbestos paper, asbestos cement boards, or thin gypsum lath. Although the actual surface of the wall will still be combustible, the danger of fire spreading through a wall into another room will be markedly reduced by such a precaution. Its cost, of course, will be much higher than that of the insulating wallboard alone.

The acoustical insulating qualities of the fiberboards are indicated, in the Bureau of Standards BMS Report 17, only by tests of one trade-marked material. A plain partition of wood studs with $\frac{1}{2}$" fiberboard panels on both sides was reported as having a decibel reduction efficiency of only 29.4. When plastered with a standard $\frac{1}{2}$" gypsum plaster, the acoustical efficiency rises to nearly 48 decibels, making the combination acceptable.

Strength tests for insulating wallboards can in general be only pragmatic, in view of the absence of adequate test data. The few boards tested and reported on by the Bureau of Standards in special numbered BMS monographs compared fairly well with a wood lath and plaster wall, as is indicated by the data in Table 1, Part I of this review (see page 89, September 1950 P/A.)

However, all insulating fiberboards have a soft surface which is relatively easily dented or broken by a sharp blow, and a lack of cross-section strength which permits corners or edges, where exposed, to be damaged quite easily.

One limitation common to all organic wallboards and laths is their lack of what is called "dimensional stability." Fiberboards tend to expand and contract measurably with changes in humidity inside the house, as do the softwoods until they have dried out. For example, if a fiberboard is installed during a dry spell, with the boards butted closely against each other, they may buckle slightly when the atmosphere becomes damper and the boards absorb moisture and expand. For this reason it is recommended that insulating board products of all types be installed with small cracks, roughly 1/32" in width, between each piece, particularly if the weather is dry when the panels are put in place.

All fiberboards are susceptible to a greater or lesser danger of attack by decay organisms, insects such as termites, and rodents. Certain trademarked products are said to be "resistant" to some or all of these pests, as a result of special protective treatments, but as pointed out in Part I these claims must be taken with a grain of salt in the absence of impartial and independent tests.

In actual practice, the insulating wallboards seem to be most useful for finishing areas in basements or in attics, or for low-cost remodeling of rooms with damaged plaster. In these installations, at least when the boards are placed against incombustible backings as in the case of a basement wall or a damaged plaster surface, their low cost, fair insulating value, and ease of installation makes them very attractive to the home owner, and not a serious fire hazard. Whether they have any appeal to the architect in search of wall materials with good all-round physical properties is something each individual practitioner must decide.

Fiber insulating board lath was critically examined by the Bureau of Standards in its report BMS 3 (1938). The major difficulty encountered was the lack of dimensional stability of the lath under changing conditions of humidity. This resulted in some instances in as much as 0.05" buckling across a 16" span. In a series of tests involving plastering of the lath, it was found that a three-coat plaster was preferable to a two-coat job. Furthermore, a quick-setting plaster was much better than a slow-setting type, since "with the slow-setting plaster the buckling of the lath resulted in uneven surfaces and cracks along the points, even with strong plasters." (See page 7, BMS 3.)

It was also pointed out that oversanded plasters were unsatisfactory, and that "strong, quick-setting plaster $\frac{5}{8}$" thick was satisfactory, but when the thickness was only $\frac{3}{8}$", cracks developed in some instances along the horizontal joints of the lath after the panels had been dried."

Consequently quick-setting, strong plasters, applied at least ½" thick in three coats were recommended, the scratch coat being 1:2 gypsum plaster and sand by weight, and the brown coat 1:3.

The performance qualities of an insulating fiberboard lath and plaster wall are indicated by the following figures: 35 minutes ultimate fire resistance period, as against the 45-minute recommended standard; thermal insulating efficiency, slightly better than with the insulating fiberboard alone—a conductance of 0.60 for ½" lath and ½" plaster, as against 0.66 for the lath alone; acoustical insulation efficiency 47.9 decibel sound transmission loss, well above the standard of 40 decibels; strength data probably the same or better than with the unplastered insulating fiberboards; decay and pest resistance also probably somewhat better than with the plain board.

The noninsulating vegetable fiberboards, with a thermal conductivity rating of between 0.42 and 0.45 per inch of material, are not so very much less efficient than the insulating wallboards, which have conductivity factors ranging from 0.33 to 0.38 per inch. However, since they are no more than $\frac{3}{8}$" thick, their actual net insulating value is not large enough to warrant their use without batt or fill insulation between the studs and joists wherever winter climates are severe.

As stated before, Homasote, Upson Board, and Beaver Board are all primarily waste paper products. Homasote is an integral board; Upson and Beaver, in wallboard thicknesses, are 6-ply laminated sheets. They all have somewhat higher tensile and nail holding strength than the insulating boards, and a slightly greater dimensional stability. The Bureau of Standards gives wallboards weighing 1.1 pound per square foot (the ones listed weigh even more) a 15-minute fire rating, as against 10 minutes for the insulating boards. Consequently the fire safety of the non-insulating pulp boards is not significantly greater than that of the lighter materials, with the possible exception mentioned below. No specific tests of any of these materials for acoustical insulation have been reported by the Bureau of Standards.

Perhaps the greatest advantage of Homasote and Upson Board is the fact that they are available in huge, room-sized panels measuring up to 8' by 14' over-all. This means that it is possible to finish an average-sized room with no joint or, at the most, one on each wall. It also may mean that a wall so finished will have a slightly higher fire resistance rating than mentioned in the previous paragraph, since the wall surface is monolithic, and has no cracks or joints through which the flames can spread. No actual tests have been made to prove whether there is anything to this supposition, but it at least remains logically reasonable that it should be so.

The integral pulpboard, Homasote, must be wetted overnight before applying so that full expansion of the material may be achieved; when this wetting is not done the results are catastrophic. Homasote may be simply nailed or, better, glued and nailed to the studs and ceiling joists. It has an easy surface to decorate which, however, cannot be plastered, as was mentioned earlier.

The big Upson Board sheets are fastened by means of special floating hangers which are nailed to the studs and joists, and to which the 8' by 14' panels are attached by light blows with a mallet or other nondefacing tool. In experience, Upson Board makes effective dry walls which can be painted or papered, or even left untreated, since it comes with a factory finish suitable for a finished wall. It, too, cannot be plastered.

The hardboards are dense, hard, noninsulating and practically nonwarping woodpulp boards which are used most often to make cabinet and closet sliding door panels and also, in low cost dwellings, to finish or refinish kitchens and bathrooms. For the latter purpose, the material is made with a tile-scored surface which can be painted with enamel paints. The hardboards have also been used as regular wallboards, most often to create the effect of a dado or wainscot around the lower part of a room, but sometimes to finish the whole wall surface. The hardboards have roughly the same fire resistance as the hardwoods, and consequently, since they cannot be plastered, are not acceptable for use as a 45-minute fire rating material, particularly in the thin sheets currently available. They are somewhat stronger than other fiberboard products and are, relatively speaking, moisture proof and resistant to insect and rodent attack except under unusual circumstances.

Hardboards are available in thicknesses ranging from ⅛" up to 5/16"; the type specifically designated as wallboard is 3/16" thick, and comes in panels measuring 4' by 8', 10', and 12'.

Plastic wall surfaces, such as Marlite (which is a decorative finish factory-applied to a Masonite base by the Marsh Wall Products Company, a subsidiary of the Masonite Corporation) and Micarta, Formica, and the like (which are thicker and more durable versions of a plastic-finished wall surface, most commonly laminated to plywood) cannot serve as wall materials themselves, but must be supported either by a hardboard or a wood or plywood backing. Consequently they are classed here as wall finishes rather than wall materials, and are not included in this review. The same holds true of the various types of tile used to finish bathrooms, kitchens, and (sometimes) more formal rooms in homes. All require a plaster, cement, or dry wall backing, and cannot count as a separate and independent wall material.

(Part 3, concluding this series, will appear in the November 1950 issue of P/A.)

Cold Cathode Fluorescent Lighting

By BERNARD F. GREENE*

All of the lamp lengths listed below are available in a 20 millimeter (approximately $\frac{3}{4}$-inch) diameter lamp. The lumen output of the 20 millimeter lamp is about nine percent greater than that of the 25 millimeter lamp.

Table 1: Photometric Data for Standard Cold Cathode Lamps

F L A LAMP TYPE	Lamp Size Diam. MM. (1)	Lamp Size Length Inch.	Rated Life Hours	Lamp Watts	Lamp Current Amps.	Warm White Lumens (2)	Warm White Brightness c/in² (3)	3500° W Lumens (2)	3500° W Brightness c/in² (3)	Daylight Lumens (2)	Daylight Brightness c/in² (3)	Soft White Lumens (2)	Soft White Brightness c/in² (3)
2593	25	93	15,000	43	.120	2300	2.9	2150	2.7	1950	2.4	1600	2.0
				41	.100	2200	2.8	2050	2.6	1850	2.3	1500	1.9
				22	.050	1150	1.4	1100	1.3	1000	1.2	800	1.0
2584	25	84	15,000	41	.120	2000	2.8	1900	2.7	1700	2.4	1400	2.0
				39	.100	1900	2.7	1800	2.5	1600	2.2	1300	1.8
				21	.050	1000	1.4	950	1.3	850	1.2	700	1.0
2576	25	76	15,000	40	.120	1750	2.7	1650	2.6	1500	2.3	1200	1.9
				38	.100	1650	2.6	1550	2.4	1400	2.2	1150	1.8
				19	.050	900	1.4	850	1.3	750	1.1	600	0.9
2564	25	64	15,000	38	.120	1350	2.5	1250	2.3	1150	2.1	950	1.8
				35	.100	1300	2.4	1200	2.2	1100	2.0	900	1.7
				18	.050	700	1.3	650	1.2	600	1.1	500	0.9
2552	25	52	15,000	34	.120	1000	2.4	950	2.2	850	2.0	700	1.6
				30	.100	950	2.2	900	2.1	800	1.9	650	1.5
				16	.050	500	1.2	450	1.0	450	1.0	350	0.8

(1) 25 mm = approx. 1 inch; 20 mm = approx. $\frac{3}{4}$ inch.
(2) Average initial rating after 100 hours operation 7000 hour rating approx. 77 percent of initial rating. Based on averages of manufacturers published catalogue data.
(3) Brightness values in candles per square inch: 1 c/in² = 452 foot lamberts.

Cold cathode designates a type of fluorescent lamp; to all outside appearances it looks the same and produces the same type of light as other fluorescent sources. The chief difference between cold cathode, preheat start, and slim line fluorescent lamps is found in the type of electrodes used in their manufacture. The cold cathode is in the form of a small metal thimble which is about one inch long and is internally connected to the lamp base. These thimbles are made from a special iron which operates at a relatively cool temperature and results in the special qualities inherent in cold cathode fluorescent lighting.

history

The history and development of cold cathode interior lighting lamps can be traced back through a related medium — colored and fluorescent tubes used for electrical display, electrical advertising, and ornamental lighting purposes. As early as 1904, D. McFarlen Moore installed a single tube about 180 feet long within which a discharge took place between cold cathode electrodes through carbon dioxide or nitrogen gas.

The next significant step in the development of cold cathode, which led to the establishment of the sign industry, was made by Georges Claude in 1910 when inert gases such as neon, argon, helium, krypton, and zenon were first used in electric discharge tubes. In 1938, progress made in the production of fluorescent phosphors led to the large scale commercial introduction of cold cathode fluorescent lighting.

lamp life

One of the most significant advantages of cold cathode is the extremely long life of the light source. At present, the life rating of the cold cathode lamp, as established by the Fluorescent Lighting Association, is 15,000 hours; after this time interval, it is predicted that approximately 10 to 15 percent of all lamps in a given group would be out. On a basis of life rating similar to that used by the hot cathode industry (the point at which 50 percent of the lamps in any group would be out), the expected life rating of the cold cathode lamp is greater than 25,000 hours.

The cold cathode lamp lights instantly and its life is not affected by the number of starts. Many installations in which cold cathode lamps have been used on a blinking cycle have been operating satisfactorily for 10 years. No method of accelerating the life of fluorescent lamps for testing purposes has ever been developed; as a result, up to 10 years transpire before test results can be established. Records are just now becoming available on cold cathode lamps which were installed from 7 to 10 years ago and are still giving satisfactory performance.

lamp brightness

Cold cathode light sources, because of the type of electrodes employed, operate at maximum efficiency as low brightness sources; the most popular ratings are in the 100 to 150 milliampere range. At these values, the standard 8 foot, 25 millimeter diameter (approximately one inch) lamp operates with a brightness of less than 2.7 candles per square inch.

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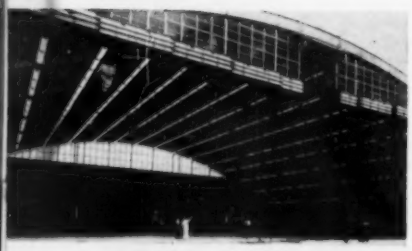
Table 2: Number of Standard Lamps Connected in Series to Each Transformer

TRANSFORMER RATING			STANDARD LAMP DESIGNATIONS									
Open Circuit Volts	Short Circuit Amps.	Watts	Lamp Current Amps.	2052	2064	2076	2084	2093	2552	2564	2576	2584	2593
12,000	.120	580	.100	18	14	12	11	10	22	18	15	14	12
		630	.090	22	18	15	14	12	27	21	18	16	14
9000	.120	430	.100	12	10	9	8	7	15	12	11	10	9
		470	.090	15	12	11	10	9	20	16	13	12	11
7500	.120	350	.100	12	10	8	7	6	13	11	9	8	7
		400	.090	15	12	10	9	8	15	12	11	10	9
6000	.120	260	.100	10	8	7	6	5	12	10	8	7	6
		310	.090	12	10	8	7	6	13	11	9	8	7
5000	.120	260	.100	9	7	6	5	4	10	8	7	6	5
		260	.090	10	8	7	6	5	12	10	8	7	6

Transformer sizes also available in other short circuit ratings frequencies, and voltages. For 60 MA lamp short circuits ratings, the same open circuit voltage, and the same loading, the lamp currents are approximately 50% of those shown above.



Above, top: discomfort from glare, the result of a reflected image of the light source from shiny paper, has been eliminated in this drafting room through the use of cold cathode which has a low brightness source. Installations by this manufacturer are said to operate effectively on 25 cycles without discomfort of flickering. *Photo: Photographic Arts; installation by Q.R.S. Fluorescent Lighting Corporation, Toronto, Canada.*

Above, bottom: 350 cold cathode units, mounted at ceiling height in this hangar, produce 15 foot candles of shadowless light at the wing level of DC-6 planes which are serviced here. Although there is a wide variation in temperature and atmospheric conditions, this installation provides excellent light distribution and solves a difficult maintenance problem. *Installation by Colonial Electric Products, Incorporated, East Paterson, N. J.*

This low brightness lamp is adaptable to a wide range of applications using bare tubes; in many instances the cold cathode bare tube installations produce a brightness contrast less than that obtained by the use of the preheat type of fluorescent lamp with louver or glass attachments. For the same brightness contrast, the overall efficiency for the bare tube cold cathode source is higher than that of the shielded unit.

glare

Discomfort from glare is the result of high brightness contrast between the light source or its mirrored image and the surrounds of the task. The ways to reduce this contrast are to shield the source or to start with a low brightness source. Recent tests have indicated that the discomfort caused by most fluorescent lighting installations is the result of the reflected image of the light source from shiny paper or glass-topped desks. Since it is not always possible to control the sheen of the reading and writing surfaces, it is necessary to reduce the brightness at its source. This can only be done with the use of a diffusing medium, or by the initial use of a low brightness source such as a cold cathode fluorescent lamp.

lumen maintenance

All fluorescent light sources lose part of their initial light output after they have been operating for some time. Experience indicates that the rate of light loss depends upon the initial lamp brightness. It follows, therefore, that a low brightness source such as cold cathode fluorescent has a surprisingly low rate of light loss. At the end of 10,000 hours of operation, the light output of a cold cathode lamp is in the order of 74 percent of its original 100 hours rating, while at the end of 20,000 hours, the light output is 65 percent of the 100 hour rating. The lumen maintenance of the cold cathode lamp after about 15,000 hours of operation is approximately eight-tenths of one percent for each 1000 hours of operation. Based on these figures of lumen maintenance, it can be shown that for normal commercial or industrial uses it is economical to use the source in the order of 25,000 hours and then to group-replace the installation at this time.

lamp efficiency

Cold cathode lamp efficiency is about three to four times that of the incandescent source. Compared to the hot cathode, the initial efficiency of the cold cathode source is slightly lower; however, this difference is soon offset because of the higher lumen maintenance.

standardization

Standard types and sizes of cold cathode lamps have been established by the American Standards Association. These standard lamps are available from any of the established cold cathode lamp manufacturers throughout the country. The types, sizes, and standard photometric data are given in Table 1.

flexibility

In addition to standardized cold cathode lamps, a wide range of custom sizes and types is available. One of the chief attributes of the cold cathode source is its flexibility. For special installations, it is possible to obtain lamps in many diameters,

wattages, lengths, colors, and shapes. Lamps can be bent around corners or curves, made to any pattern, or made to suit any particular purpose.

operating range

The cold cathode lamp operates through a wide range of temperature and humidity conditions. By the use of ballasts having a secondary rating of 900 volts, these lamps have been successfully operated at temperatures of below freezing to above 120 F. When operating at extremely low temperatures, however, the light output of the lamp is below the rated value.

cold cathode lamp installation

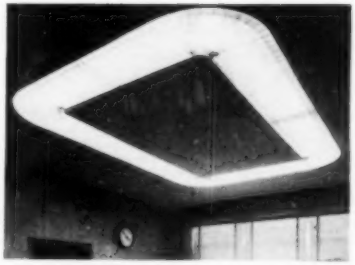
There are generally two methods of installing a cold cathode light source. One of these, the ballast type of operation, is adapted to the standardized package installations; the other, the series circuit, is more widely used with standard or special types of lamps. The ballast type of operation is similar to that used with all fluorescent light sources. In this case, a single, double, or four-lamp ballast is mounted in a fixture. The entire unit comes complete and ready for mounting over an existing outlet or for direct connection to the source of electrical energy. The popular ratings of ballast in this type of installations are 50 or 60 cycles and/or 110-125 volts and 220-250 volts.

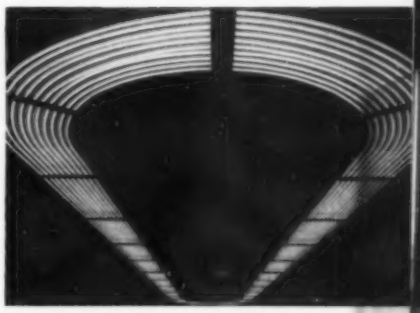
The series circuit arrangement for installing cold cathode fluorescent lamps can be likened to a chain in which each lamp is connected through the socket to the adjoining lamp. One large transformer serves all of the lamps in a circuit and up to 14 eight-foot lamps can be employed. The advantage of this sort of installation is that a minimum amount of wiring is required and the transformer can be located outside of the immediate area of the lamps. This arrangement is particularly suited to cove lighting or to instances where long lamp runs are involved.

The size and rating of the transformer determines the number of lamps which can be connected in the circuit. Transformers are rated in terms of voltage and current; it is the voltage value which determines how many lamps can be connected to each transformer while the current is indicative of the lamp brightness. The number of standard lamps which can be connected to different transformer types is given in Table 2.

lamp dimming

The cold cathode source is the only fluorescent lamp which is adaptable to dimming. Where dimming is required, the usual procedure is to install the lamps on a series type of installation and to connect any of the conventional types of dimmers to the low voltage side of the transformer. With this type of installation, lamps can be dimmed down to 10 percent of the full rated light output.





Left: diffused by eggcrate louvers, a four 25 millimeter diameter tube installation provides an average of 40 foot candles throughout this office area. The flexibility of the tubing easily conforms to the architectural requirements of the ceiling.

Below: this picture strikingly demonstrates the flexibility of bare tube cold cathode installations. Employing 25 millimeter warm white tubes this lighting effectively illuminates a men's clothing store. *Both photos: Jacob Stelman; installation by Cutler Light Manufacturing Company, Philadelphia, Pa.*

where to use cold cathode

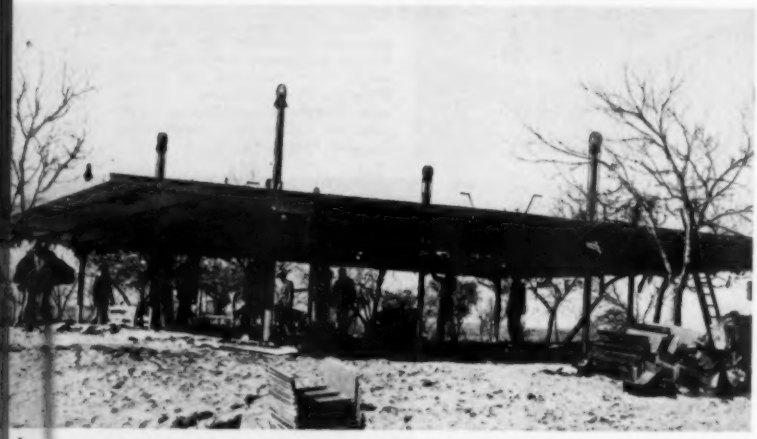
The properties of low brightness, instant start, extremely long life, and others, make the cold cathode lamp adaptable to numerous installations. Wherever a long fluorescent lamp (four feet or more) can be employed, cold cathode fluorescent is applicable. In this country it has been installed in all types of stores, industrial plants, office buildings, schools, and theaters. Its use is not restricted to this country alone: as a matter of fact in most other countries throughout the world cold cathode fluorescent is the favored form of lighting.

Where maintenance of the light source is a problem, this lighting method is particularly well suited. In the Detroit school system, where a difficult maintenance problem existed, cold cathode lamps were installed and after operating for several years the lamp replacement was found to average less than one lamp per hundred per year.

The immediate cost of a lighting system is in many instances a determining factor in the choice of the system used. For this reason, the use of cold cathode is ruled out—for the calculated cost per light unit with cold cathode is higher than for most other lighting systems. However, if the cost of the installation is taken over a period of time—or if the installations are compared on the basis of equal quality of light, i.e. brightness—then it can be shown that the cost favors the use of cold cathode.

Above: this conventional type of cold cathode installation consisting of two rows of six-lamp units 48 feet long provides an average light intensity of 100 foot candles over the counters. The dimensions of this market are 20 feet x 55 feet with a 10 foot ceiling height. *Photo: D. L. Hopwood; installation by Morton Neon Company, Denver, Colo.*

Experimental Slab Becomes Roof of New Physics Building



Above: slab being raised during early experimentation.
Below: completed structure. Constructed of concrete and metal, this building is completely fireproof. On three of its sides, there are aluminum sash, glass, and screen walls.

The first structure to use the Youtz-Slick lift-slab building method has been completed. This new architecture will house the physics department of the Southwest Research Institute at San Antonio, Texas.

Two years ago, the Institute undertook the development of this cost-saving building system which casts roof and upper floor concrete slabs on the ground and then raises them into place with automatic hydraulic lifting equipment. The method was originally and independently conceived by Philip N. Youtz, New York architect, and Tom Slick, San Antonio oil producer. During a 24-month period, consisting of all sorts of weather, the original slab was lifted and lowered many times in an effort to evaluate the efficiency of various kinds of lifting equipment. This same slab now roofs the new physics building. O'Neil Ford was the consulting architect.

The building was completed almost as an afterthought when the testing of the lifting equipment had been finished. As an increasing volume of industrial projects involving physics required that the Institute provide a laboratory of its own, the 1820 square feet under the experimental slab was selected to accommodate the staff and equipment needed for these projects. At the present time, the laboratory is engaged in electronics research for several companies and governmental agencies.

Recently, it was announced that this building method had been licensed to James Stewart & Company of New York, Dallas, and Chicago. These builders were not only licensed to use the method itself, but were also empowered to supply the service to other contractors. This organization employed the Youtz-Slick system in its first commercial test at the Trinity University Administration Building in San Antonio which is now nearing completion. The license under which James Stewart & Company will use this construction method is non-exclusive and purely domestic in nature.

p/a products

air and temperature control

Venturi-Flo JB and JSC Outlets: air distribution outlets with adjustable air deflection and high aspiration rate, designed for installations where outlets cannot be recessed into ceiling. Available as supply or combination supply and return outlets, in wide range of sizes; baked metalescent aluminum finish or prime coat for painting. Barber-Colman Co., Rockford, Ill.

Model 324 Winter Air Conditioner: automatic gas-fired furnace for attic installation. Two basic component parts which may be separated to facilitate handling and installation; controls and draft hood can be mounted on either right or left side with draft hood opening facing front or back. Available in two capacities of 100,000 and 125,000 Btu per hour input. Bryant Heater Co., 17825 St. Clair Ave., Cleveland 10, Ohio.

Plug-in Room Air Conditioner: compact, self-contained unit fits almost any window, projecting only 13" in room. One-half horsepower sealed rotary Meter-Miser compressor; controls conveniently located on top of gray enameled cabinet. General Motors Corp., Frigidaire Div., Dayton 1, Ohio.

Aeropass Refrigerant Gas Condenser: designed for air conditioning and industrial refrigerating systems using Freon refrigerant; operates on evaporative principle, saving 95% condensing water required by shell and tube condenser method; low first and operating cost since conventional condenser and cooling tower are eliminated. Niagara Blower Co., 405 Lexington Ave., New York 17, N. Y.

Multi-Vent Panel: new one-foot wide low-velocity air distribution ceiling panel, supplementing current line of two- and three-foot panels. Especially designed for use when comparatively small volumes of air are required for cooling; well adapted to acoustical ceilings. Available in standard lengths of two, three, four, five, and six feet, with one to three pressure displacement valves. Pyle National Co., Multi-Vent Div., 1334 N. Kostner Ave., Chicago 51, Ill.

Gas-Fired Unit Heaters: new line with boiler-built design; generator includes burner heads and mixing tubes of one-piece cast iron construction, eliminating customary joint between two parts; high limit switch prevents overheating, both gas main and pilot light cut off automatically in case of failure. Produced in seven sizes. Trane Co., La Crosse, Wis.

Unitaire Air Conditioner: two, three, and five horsepower units, for installation in homes, factories, offices, and other commercial establishments. All-year-round air conditioning can be provided by addition of either steam or water-heating coils and outside air duct connection for ventilation air supply. Westinghouse Electric Corp., Sturtevant Div., 200 Readville St., Hyde Park, Boston, Mass.

"Yac" Air Conditioning Line: sectional design permits units to be shipped in sections, providing greater ease in handling, installing, and servicing, as well as simplifying specifications. Stocked in eight sizes, horizontal or vertical types, supplying any kind of service desired, from simple heating and cooling to complete air conditioning—heating, cooling, humidifying, dehumidifying, and filtering. Young Radiator Co., Racine, Wis.

construction

Quick-Clips: simple formed-wire clips, for use in low-cost, one-man installation of acoustical tile and duct insulation materials. Ceiling can be installed, without assistance or tools, at rate of at least 90 sq. ft. per hour. Three forms of clips available. Morton Gregory Corp., Nelson Stud Welding Div., Lorain, Ohio.

Aluminum Moldings: two types of special extruded moldings made of alumilited satin-finish aluminum for installation of structural corrugated glass. Snap-on molding particularly suited to exterior sash; screw-on molding for partitions of structural corrugated glass. In either construction glass panel is "cushion-set" by rubber-gasketed adapters and installation is then finished with aluminum-colored caulking. O. E. Stelzer, P.O. Box 715, South Bend, Ind.

Metal Framework Assembly: metal framing for support of conduit runs, permitting close installation of runs, conserving space, and providing neat appearance while eliminating need for drilling, welding, or special tools. Framing members easily attached to any part of structure to support additional runs should future requirement exist. Unistrut Products Co., 1013 W. Washington St., Chicago 7, Ill.

doors and windows

Seal-O-Matic: easily installed aluminum door seal automatically drops neoprene rubber seal one-half inch when door is closed, eliminating door-to-floor gap as well as drafts, dust, rain, etc. May be stained or painted any color; lifetime springs, no parts to adjust or repair. Seal-O-Matic Co., 460 N. Rodeo Dr., Beverly Hills, Calif.

ShurLok Latch and Lock Sets: self-aligning glass or metal knob unit sets, reversible for right or left hand doors, installed within minute. Available in pushbutton or turnbutton styles, in brass, bronze, nickel, and chromium finishes, with protective enameled coating finish. Technical Glass Co., 2050 E. 48 St., Los Angeles 58, Calif.

lighting, electrical equipment

"Strip-Line" Fluorescent Lighting System: compact, extra-shallow strip-lighting system for slimline and 40w bipin lamps. Special terminal blocks eliminate wiring, soldering, wire nuts, and wire splicing in installations; "Intra-Lok" construction enables channels to be locked together without couplings in any one of three ways. Units available in seven different types. Benjamin Electric Mfg. Co., Des Plaines, Ill.

Sightron: fluorescent fixture utilizing Plexiglas shield held by triple-plated chromium ends; construction permits shield to swing down from one end for relamping or servicing without removing shield from fixture itself. Ribbed plastic surface diffuses light evenly from bottom and sides of fixture over wide area. Available in three sizes to hold 20w, 25w, or 40w fluorescent lamps. Lightolier, Inc., 11 E. 36th St., New York, N. Y.

Hydraulic Pressure Electric Switch: cartridge-type switch for precise control of cut-in and cut-out of electrical circuits with as little as 12 to 18% pressure differential. Unaffected by extreme pressure surges, will withstand wide temperature differential without loss of accuracy or other operational characteristics. Design of unit eliminates failure due to either mechanical or hydraulic shock. Pantex Mfg. Corp., Hydraulics Div., Box 660, Pawtucket, R. I.

interior furnishings

"Madagaska": inexpensive vinyl plastic upholstery fabric simulating native Madagascan straw; washable, stainproof, impervious to alcohol, tough enough for table top application yet so pliable that it can be shaped to cover furniture without cracking or flaking. Also adaptable for lamps, screens, decorative displays, etc. L. E. Carpenter & Co., Wharton, N. J.

Cramer Posture Chairs: new line of chairs that are adjustable to any figure, for every seated working condition in factories. Many types; all adjusted by means of two simple control devices. Cramer Posture Chair Co., Inc., 1205 Charlotte St., Kansas City 6, Mo.

sanitation, water supply, drainage

Automatic Electric Water Heaters: broad new line of restyled units with capacities ranging from 30 to 80 gal. Tank construction of heavy-gage steel, with three-inch glass wool insulation to insure economical operation; equipped with readily accessible over-temperature relief valve outlet for local plumbing code requirements. Magnesium rod to protect tank against rust and corrosion is optional equipment. All heaters furnished as standard with 230/240v heating units. General Motors Corp., Frigidaire Div., Dayton 1, Ohio.

Sinkmasters: three new models of kitchen cabinet sinks for small, average, and large kitchens; sinks made of cast iron finished in enduring, acid-resisting, "Mirard" enamel; undersink cabinets are of zinc-coated steel with coat of baked-on enamel. Sink bowl corners designed with small radius to allow maximum bowl space; retractable hose spray for rinsing. Humphryes Mfg. Co., Mansfield, Ohio.

Josam Series 4650 Roof Drain: especially designed for installation on flat roofs with steel decks on industrial, commercial, and apartment buildings where connecting leader does not provide for adequate expansion and contraction. Combined flashing clamp and gravel stop hold insulation to drain body by means of four long stem studs with brass nuts, to allow for various deck thicknesses; large removable beehive dome permits exceptionally heavy drainage. Josam Mfg. Co., 303 Josam Bldg., 1302 Ontario St., Cleveland 13, Ohio.

Automatic Dishwasher: operates on new principle consisting of pumping water, superheated in booster tank, through small holes in metal tube which extends up through center of tub; pressure causes tube to spin and jets of water strike dishes racked in surrounding baskets. Cycle of thorough wash and two rinses takes less than 10 min. Steel cabinets finished in white baked-on enamel. Mullins Mfg. Corp., Warren, Ohio.

Taco Sweat Check: flow valve for sweat or solder type connections, to prevent hot boiler water from flowing to heating system when circulator is not running, thereby permitting boiler to be used for domestic hot water summer and winter. All bronze construction, made only in one inch size. Taco Heaters, Inc., 137 South St., Providence 3, R. I.

Calcinator: improved automatic disposal units, with built-in automatic draft and stack temperature control giving greater efficiency in burning all types of trash and garbage; simplified, easily accessible dehydrating burner assembly, requiring minimum replacement of parts. Two models available, one in white enamel for kitchen and utility room installation, other in gray "Krinkle-Koat" for basement or wherever appearance is secondary to convenience. Valley Welding & Boiler Co., Calcinator Div., Bay City, Mich.

specialized equipment

Crosley Kitchen Appliances: completely new lines for 1951 include: 11 Shelvador refrigerator models ranging from seven to 10.5 cu. ft. in capacity, with five models featuring completely automatic defrosting system; 10-model electric range line, comprised of both cluster and divided top models, all with automatic controls, one equipped with rotary barbecue, which is optional with other units; eight home and farm freezers, chest type, in sizes of 4.1, 8.2, 12.6, 16, and 20 cu. ft.; "corner cabinet" electric water heaters having 30 and 50 gal. capacities. Avco Mfg. Co., Crosley Div., 1329 Arlington St., Cincinnati, Ohio.

Intercom Master Station: unit construction permits easy, quick disassembly of master station for future expansion of intercom system; original amplifier and housing retained in expanding, to give greater call-origination capacity. Executone, Inc., 415 Lexington Ave., New York, N. Y.

Acorn-Oriole Gas Ranges: two models, both with roller drawer-type broilers with special smokeless grid, banquet-size oven, large storage compartment, and convenient pull-out drawer. Adjustable to city or bottled gas. Perfection Stove Co., 7609 Platt Ave., Cleveland 4, Ohio.

p/a

MANUFACTURERS' LITERATURE

★ *Editors' Note: Items starred are particularly noteworthy, due to immediate and widespread interest in their contents, to the conciseness and clarity with which information is presented, to announcement of a new, important product, or to some other factor which makes them especially valuable.*

AIR AND TEMPERATURE CONTROL

1-55. The Anemostat Air Diffuser, 6-p. folder on operating principles of aspirating air diffusers. Engineering data, formulae for calculations used in solving air conditioning problems, air distribution diagrams. Anemostat Corp. of America.

1-56. Pittsburgh Gas Unit Heaters, Series "C", AIA 30-C-43. Revised 4-p. folder illustrating gas unit heaters, with cast iron heat exchangers and combustion chambers, for commercial and industrial buildings. Sizes and capacities, safety features, measurements table for installing, standard equipment list. Automatic Gas Equipment Co.

1-57. How to Cool for Comfort, AIA 30-D-1 (5004), 32-p. illus. booklet giving general and technical data on various types of ventilating and cooling fans for homes, farms, commercial and industrial buildings. Applications, installation drawings, photos, dimension tables, specifications, definitions and formulae, index. Hunter Fan and Ventilating Co.

Booklet describing unit heaters for horizontal or down flow air delivery, for use on either steam or hot water heating systems. Application data, basic steam and hot water capacities, typical wiring diagrams, installation and maintenance instructions, roughing-in dimensions, engineering data. Other booklet presents line of gas boilers designed primarily for steam and hot water heating systems. Special features, specifications, ratings, dimensions, roughing-in data. National Radiator Co.:

1-58. National Unit Heaters, AIA 30-C-43 (575)
1-59. National Gas Boilers, AIA 30-C-1 (570)

★ **1-60. The Control of Industrial Dust** (909A), 28-p. booklet illustrating method and equipment for dust control in industrial plants. Operation of dust trapping equipment, description of component parts, types of dust collecting systems, sizes and application and engineering data, photos. Pangborn Corp.

1-61. Swartwout Airlift (341), 4-p. illus. folder describing centrifugal fan ventilator, mounted within weatherproof chamber, suitable for locations where powered duct exhaust ventilators operating at very low noise levels are desirable. Advantages, dimensions, suggested specifications, capacities. Swartwout Co.

CONSTRUCTION

Bulletin on bituminous jointing compound for vitrified tile and concrete sewer pipe. Quantities required per joint of pipe, directions for using. Other bulletin covering complete line of chemical construction materials, including corrosion-proof linings and cements, acid-proof brick and tile, corrosion-proof floors, etc. Estimating data. Atlas Mineral Products Co.:

3-42. G-K Sewer Joint Compound (M20-1)
3-43. Chemical Construction Materials (MCC No. 1)

3-44. Mirawal, AIA 15-H-2 (450), 4-p. folder describing porcelain on steel facing, laminated to Masonite hardboard backing, for interior and exterior applications. Characteristics, specifications and data, typical application photos. Baltimore Porcelain Steel Corp.

3-45. Permalite, AIA 21-A-7 (PA-7) (PA-9), two data sheets containing typical fireproofing details for application of metal lath and plaster containing lightweight aggregate to steel columns and suspended ceiling under incombustible construction. Fire ratings, typical specifications. Great Lakes Carbon Corp.

3-46. Nelson Stud Welding, 4-p. folder illustrating method of anchoring roofing and siding materials by means of stud weldng gun equipped with timer control. Drawings, photos, short form specifications. Morton Gregory Corp., Nelson Stud Welding Div.

Two 4-p. folders, one on packaged aluminum roof unit, complete with structural members, the other on aluminum gutters and downspouts. Advantages. Reynolds Metals Co.:

3-47. Lifetime Aluminum Roof for Concrete Block Buildings
3-48. Gutters and Downspouts, AIA 12-i (BP 310-C)

3-49. Toll-Brik, AIA 10-C, 6-p. folder. New masonry product with soundproof, insulating, and waterproof qualities; hollow structure, with appearance of brick but made of cement, manufactured in two sizes and also in modular shapes. Description, advantages, specifications. Tollen Co., Inc.

DOORS AND WINDOWS

Three catalogs presenting line of metal doors, metal windows, and metal screens and storm windows for residences, commercial and industrial buildings. Types and sizes, detail drawings, hardware. Ceco Steel Products Corp.:

4-60. Metal Doors, AIA 16-E (1040)
4-61. Metal Windows and Doors (1001E)
4-62. Metal Screens and Storm Windows (2001D)

4-63. Pittco Checking Floor Hinge, 16-p. illus. booklet outlining performance characteristics of various types of door hinges. Description of component parts, selection, information on hinge adjustment for speed of operation. Pittsburgh Plate Glass Co.

4-64. Ful-Vue, 4-p. folder illustrating drive-up or walk-up, outdoor customers' bank windows made of bullet resisting glass and aluminum or stainless steel framework, with foot-controlled electronic speaker and other equipment. Features, including protective devices, installation details. Protection Equipment Co.

4-65. A Brand New Air-Lec, 4-p. illus. folder on air-powered operators for large sliding doors. Advantages, method of operation, brief descriptions of other types of operators for single or double swinging doors, folding doors, etc. Schoelkopf Mfg. Co.

Two brochures, one on reversible aluminum windows designed exclusively for air conditioned structures; the other on aluminum awning windows. Suggested installation and mullion details, specifications. Ware Laboratories, Inc.:

4-66. Aluminum Monumental Reversible Window
4-67. Aluminum Monumental Awning Type Window

ELECTRICAL EQUIPMENT, LIGHTING

Folder on Vinylite louvered, over-all ceiling lighting system, reflecting and transmitting light with maximum freedom from glare. Comparative louver systems with utilization coefficiencies. Also, 30-p. illus. booklet explaining economic, health, and maintenance factors in planned program for industrial lighting. Recommended levels of illumination, special lighting problems. Benjamin Electric Mfg. Co.:

5-43. Sky-Glo (AD 5653)
5-44. Guide to Plant Lighting (AD 5573)

5-45. Your Lighting Simplified, 12-p. booklet illustrating 4-foot slimline fluorescent lighting fixture with all working parts contained in one assembly which swings down for ladderless servicing by means of "jacknife" hinge. Advantages. Edwin F. Guth Co.

5-46. General Purpose Circuit Breakers (3410), 12-p. illus. bulletin. Describes fully magnetic, non-thermal, non-enclosed, single, two, and three pole circuit breakers for general industrial use.

Construction, types of coil connection, technical data, drawings, advantages, ordering instructions. Heinemann Electrical Co.

FINISHERS AND PROTECTORS

6-15. Metal Protective and Paint Bonding Chemicals and Processes (438 B), 8-p. bulletin and reference list describing surface treating chemicals for protection of metals or as bases and bonds for decorative finishes. Types, applications, characteristics, advantages, effectiveness. Index. American Chemical Paint Co.

INSULATION (THERMAL, ACOUSTIC)

★ **9-32. Cemesto Application Data,** AIA 19-D (File 5000), 40-p. illus. manual containing design and construction application data on insulating structural panels for walls, roof decks, and partitions in any building construction. Properties, methods of application on steel or wood framing, sections, details, elevations, typical applications, index. Celotex Corp.

9-33. Kaylo Laminated Panels, AIA 17-A, 12-p. illus. booklet describing incombustible, lightweight, laminated panels made of calcium-silicate insulating material, faced with cement-asbestos, said to have better insulation value than 16 inches of solid concrete. Advantages, comparison chart, technical data, typical details. Owens-Illinois Glass Co., Kaylo Div.

9-34. The Long Life Industrial Insulation, AIA 37-B (G91051), 20-p. illus. booklet on advantages of Foamglas (rigid cellular glass insulating material) insulation for pipe and fittings and process equipment in industry. Table of sizes and thicknesses, typical application data, properties, accessory materials, details for insulating tanks, ducts, removable covers, and tank heads. Pittsburgh Corning Corp.

SANITATION, WATER SUPPLY, DRAINAGE

19-74. Adsco Strainers and Separators (46-50A), 16-p. illus. catalog of Y- and T-type strainers, suction strainers, multiflow separators, and receiver-separators for protection of steam, gas, air, water, and oil equipment. Dimensions, weights, technical data, list prices. American District Steam Co.

19-75. Garbage Disposers, AIA 29-H-61, file folder containing data on requirements and specifications for automatic garbage disposer. Includes two folders giving advantages, dimensions, installation views, and installation detail sheets. Given Mfg. Co.

19-76. Self-Priming Centrifugal Pumps (636.1), 8-p. illus. bulletin. Information on newly designed valveless pumps, giving efficiency comparable to standard centrifugal pumps; made in various sizes with both open and closed impellers. General description, operation, performance tables, specifications, dimensions. Goulds Pumps, Inc.

Booklet describing two models of automatic dishwasher operating on entirely new principle, giving maximum efficiency in less time than conventional dishwasher. Operation, advantages. Other booklet offers line of steel kitchen units, including sinks, garbage disposers, and cabinets in wide range of sizes and styles. Brief descriptions, color illustrations. Mullins Mfg. Co.:

19-77. Automatic Dishwasher (4008)
19-78. How to Get Your Dream Kitchen (3258)

19-79. Clearstream Stabilizer and Feeders, 4-p. illus. folder on water conditioning equipment that will prevent corrosion and/or accumulation of scale and iron deposits in any water-supply system. Models for home and commercial use, advantages, installation diagram. Reynolds-Shaffer Co.

SPECIALIZED EQUIPMENT

Folder and 16-p. booklet presenting line of modern bathroom cabinets with extra shelves in cabinet doors, with or without fluorescent lighting fixtures. General data, illustrations. Grote Mfg. Co., Inc.:

19-80. Bathroom Cabinets, AIA 29-A
19-81. Bathroom Beauty on a Budget

19-82. Electric Clock and Program Systems (178), 4-p. illus. folder. Description of system providing simple, efficient time and signal equipment for schools and colleges. Advantages, operation of component parts, specifications. Standard Electric Time Co.

SURFACING MATERIALS

19-83. Built-Up Roofs Applied Cold! (BK-402), 14-p. illus. booklet on cold application of emulsified asphalt in built-up roofing work — maintenance, re-roofing, and new built-up roof construction. Advantages, specifications, application photos. Flintkote Co.

19-84. Handbook and Guide to Weldwood Plywood and Other Products (1007-5005). Indexed page arrangement provides easy reference to various kinds of plywood building products, grouped under use for which they are intended. Brief descriptions, specifications, price list. U.S. Plywood Corp.

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PROGRESSIVE ARCHITECTURE, 330 West 42nd Street, New York 18, N. Y.
I should like a copy of each piece of Manufacturers' Literature circled below.
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1-55	1-56	1-57	1-58	1-59	1-60	1-61	3-42
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4-61	4-62	4-63	4-64	4-65	4-66	4-67	5-43
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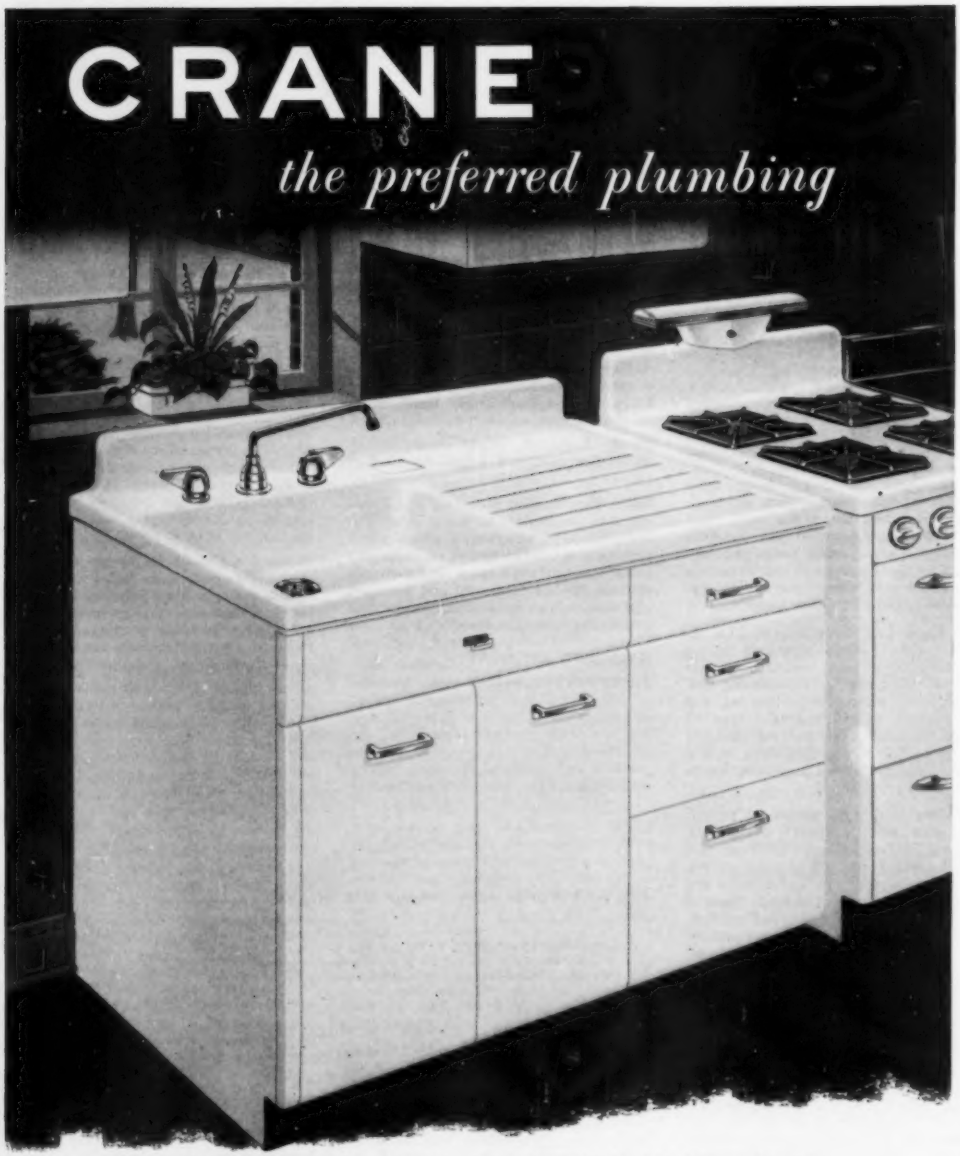
the preferred plumbing



THE CRANE STEWARDESS SINK, 42″ long by 22½″ wide, ideal for budget-planned kitchens. Sink of acid-resisting porcelain enameled cast iron features 8″ deep basin, ledge for glasses, *Dial-ese* controls. Available with right or left hand drainboard. Bonderized steel cabinet has one shallow, two deep roller drawers, plus large cupboard or utility space. Consult your Crane Branch or Crane Wholesaler.

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When a resilient floor is being selected for a place of business where style is an important factor in selling, Armstrong's Linoleum is almost always the first choice. No other type of resilient flooring material can be used so freely in the development of smart decoration. No other flooring material offers such a wide choice of beautiful patterns and style effects, such a complete range of colors.

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For basement shops and all buildings with a concrete floor slab that is in direct contact with the ground, Armstrong's Asphalt Tile is the best flooring buy. It's not harmed by the alkaline moisture present in such subfloors.

Armstrong's Asphalt Tile is a durable floor that can be used in other areas, too. Its low price makes it a wise choice where first cost is important. It's an attractive floor, available in a range of handsome colors, which can be laid in any geometric design. It is made in two desirable thicknesses—1/8" and 3/16"—and in two practical types—Greaseproof and Standard.

For additional information on these floors as well as for data on Armstrong's Linotile®, Rubber Tile, Arlon * Tile, or Cork Tile, see the latest edition of Sweet's Architectural Files, section 13, catalog B or the 1950 edition of Armstrong's Pattern Book. For samples, literature, and unbiased help on any unusual flooring problems, architects are invited to get in touch with the nearest Armstrong District Office or write directly to the Armstrong Cork Company, Floor Division, 8910 State Street, Lancaster, Pennsylvania.

*T-M APPLIED FOR

New Ohio Senior High illustrates

how **BERGER** serves America's schools

Euclid Senior High School: Harry A. Fulton, Architect; R. B. Delamotte and Ben Krinsky, Associate Architects; R. P. Carbone Const. Co., General Contractor.

1760 Berger recessed single tier steel lockers line Euclid Senior High School corriders. Door louvres allow full ventilation.

35 homerooms are equipped with this recessed combination teacher's wardrobe and book shelf unit, finished in modern silver gray.

Opened door view shows teacher's wardrobe and book shelf unit in use in Euclid Senior High School mathematics department.

154 Free-standing Berger single tier lockers and 702 Berger box lockers serve girls' locker and dressing rooms. Boys' locker and dressing rooms include 154 free-standing single tier lockers and 720 truck-mounted Berger wire baskets.

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Berger serves the educational world completely . . . at all levels from kindergarten to college. Berger service follows through from the original planning and engineering to tightening of the final bolt . . . offers you specific information about numbers and types of lockers needed . . . suggests locker locations for best efficiency . . . can furnish companion steel equipment at the same time. See Sweet's Architectural File, or write us for more information.

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STEEL Shop Equipment, Shelving
STEEL Book Shelf Units, Library Stacks

WILLIAM CROSBY RESIDENCE, Greensboro, Vermont
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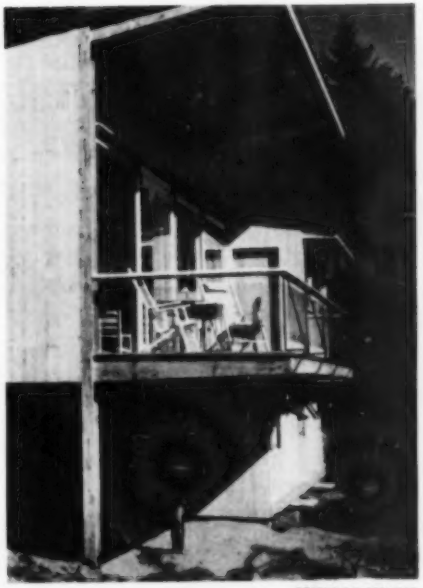

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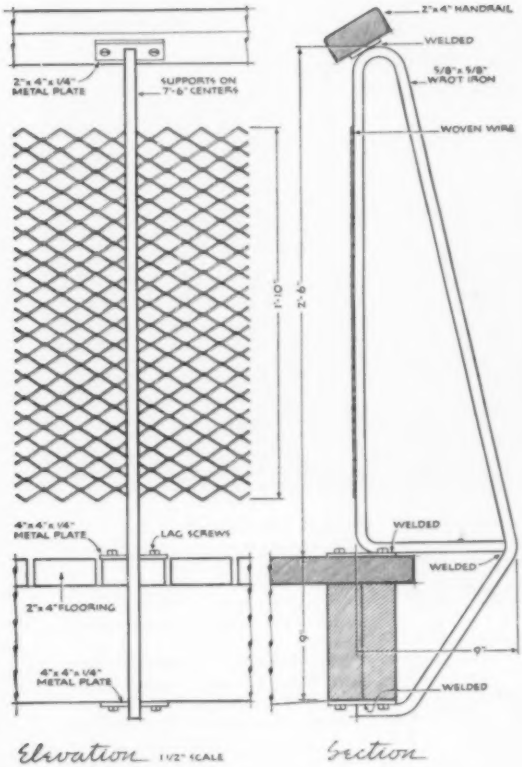

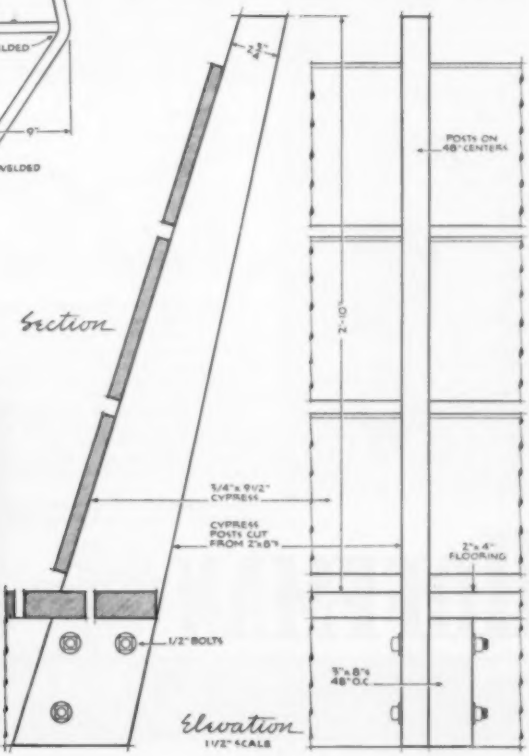

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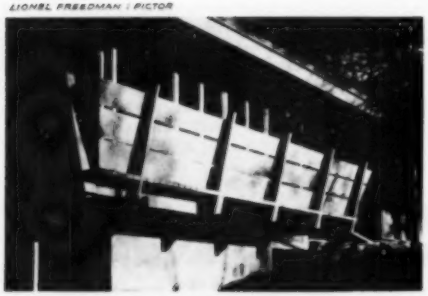
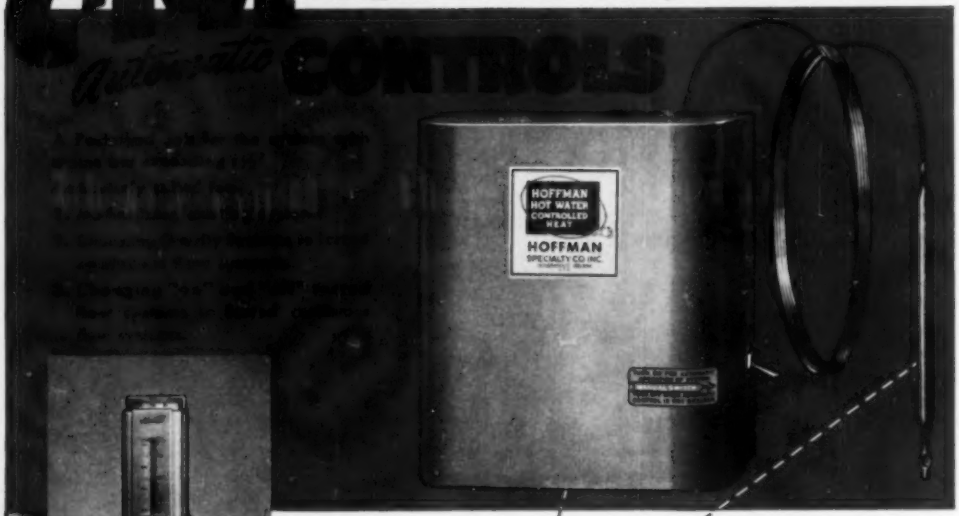
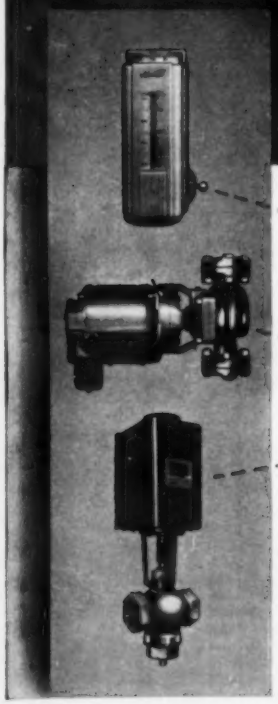


ROY S. JOHNSON RESIDENCE, Ardsley, New York
ROY S. JOHNSON, ARCHITECT

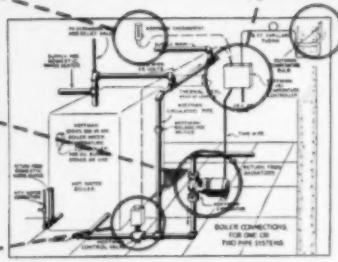
C-141 HOT WATER SYSTEM

Automatic CONTROLS





A POPULAR PRICED CONTINUOUS CIRCULATION SYSTEM..... THERMOSTATICALLY CONTROLLED



HOFFMAN C-141 CONTROLLER: Automatically maintains indoor comfort and temperature by combining Room Thermostat control with continuous circulation of the heating medium.

HOFFMAN CIRCULATOR: Continuously circulates the heating medium throughout the heating season. Automatically stops when outdoor temperature goes above 65° and starts again in the fall when heat is required.

HOFFMAN CONTROL VALVE: An especially designed valve to keep the hot water in the heating system at the desired temperature to maintain heating comfort.

HOFFMAN BALANCING ORIFICE: Engineered to maintain proper balance between the circulating pipe and boiler circuit.

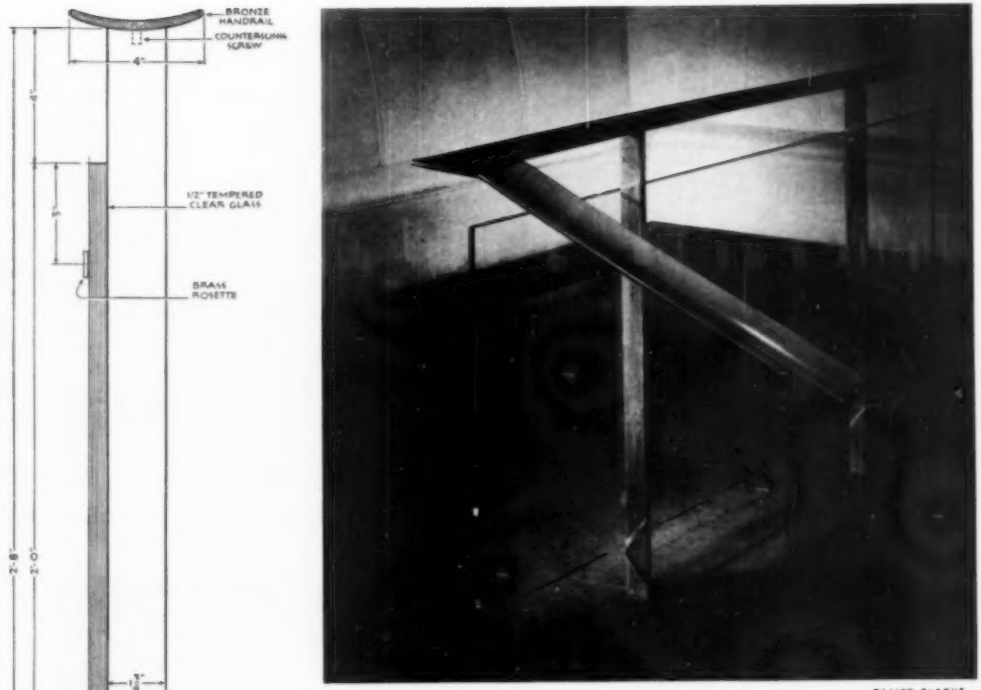
HOFFMAN ROOM THERMOSTAT: Heat anticipating thermostat adjustable to slow, medium and fast cycles.

The Hoffman C-141 Comfort Package offers *precisely controlled heating*—yet the cost is within the budget of even modest homes.

The uniformity of a *continuously circulated* forced hot water heating system can now be obtained with simplified and inexpensive equipment. The Hoffman C-141 Comfort Package combines a Circulating Pump, Temperature Controller, Control Valve and Room Thermostat.

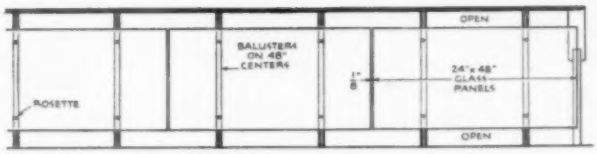
In operation, the C-141 Comfort Package effects a constant balance between heat loss and heat supply, so that the home temperature is held uniform, regardless of weather variations. Note in the diagram that the boiler is by-passed from the rest of the circulating system. Hot water from the boiler is admitted *only* when the room thermostat requires additional heat. Hence the system keeps pace with the actual need for heat and never delivers a fuel-wasting excess. Send for Bulletin No. HW-647.

HOFFMAN *Hot Water* CONTROLS

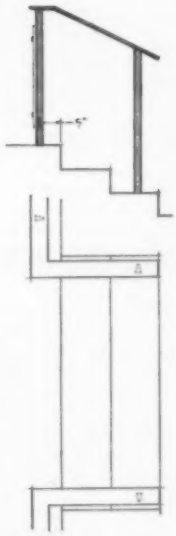


Rail Section 3" SCALE

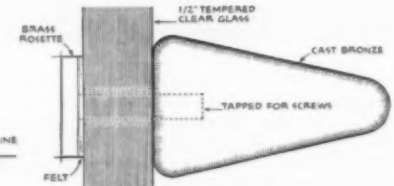
ELLIOT CLARKE



Elevation and Section 3/8" SCALE



Plan 3/8" SCALE



Balustar FULL SIZE

Handrail FULL SIZE

WARWICK HOTEL, Philadelphia, Pennsylvania

REISNER & URBAHN, ARCHITECTS

Architect specifies KIMSUL* for insulating efficiency, ease of installation

DAVID FRIED · Architect
508 NEWBURY STREET BOSTON 16, MASS. COmmonwealth 5-5869

August 22, 1949

Kimberly-Clark Corporation
Neenah
Wisconsin

Gentlemen:

Kimsul insulation impressed me most for the ease and rapidity of its installation. I have tried other types, and have even had the trying experience of men walking off the job when installing other insulation.

In designing the Bevelander House, I sought the best quality insulation obtainable, with the least installation problems. Kimsul insulation more than met this bill. I was amazed to see a crew of three men complete the installation in the Bevelander House in one day. In these days of building headaches, this is impressive.

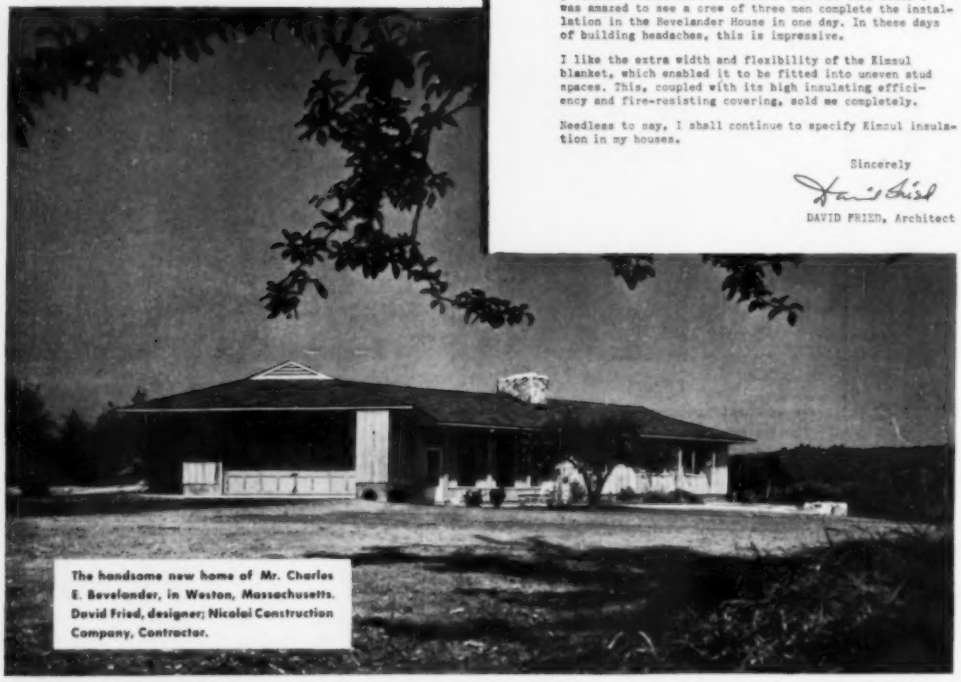
I like the extra width and flexibility of the Kimsul blanket, which enabled it to be fitted into uneven stud spaces. This, coupled with its high insulating efficiency and fire-resisting covering, sold me completely.

Needless to say, I shall continue to specify Kimsul insulation in my houses.

Sincerely

David Fried

DAVID FRIED, Architect



The handsome new home of Mr. Charles E. Bevelander, in Weston, Massachusetts. David Fried, designer; Nicolai Construction Company, Contractor.

Each year, as the facts and figures about KIMSUL* insulation become better known, more and more architects specify it for residential construction. For in today's highly competitive market, maximum efficiency with *low true cost* is an absolute necessity.

The many-layer stitched KIMSUL blanket provides *lifetime* uniform protection over every inch of covered area. Can't sag or settle to leave heat-leaking thin spots. It offers high thermal efficiency ("k" factor 0.27), plus resistance against fire, vermin and mold. In easy-to-handle *measured* rolls, KIMSUL can be installed quickly and properly by unskilled labor with remarkable savings in cost. You'll find, too, that KIMSUL is flexible, caulkable, and provides an insulated fastening edge.

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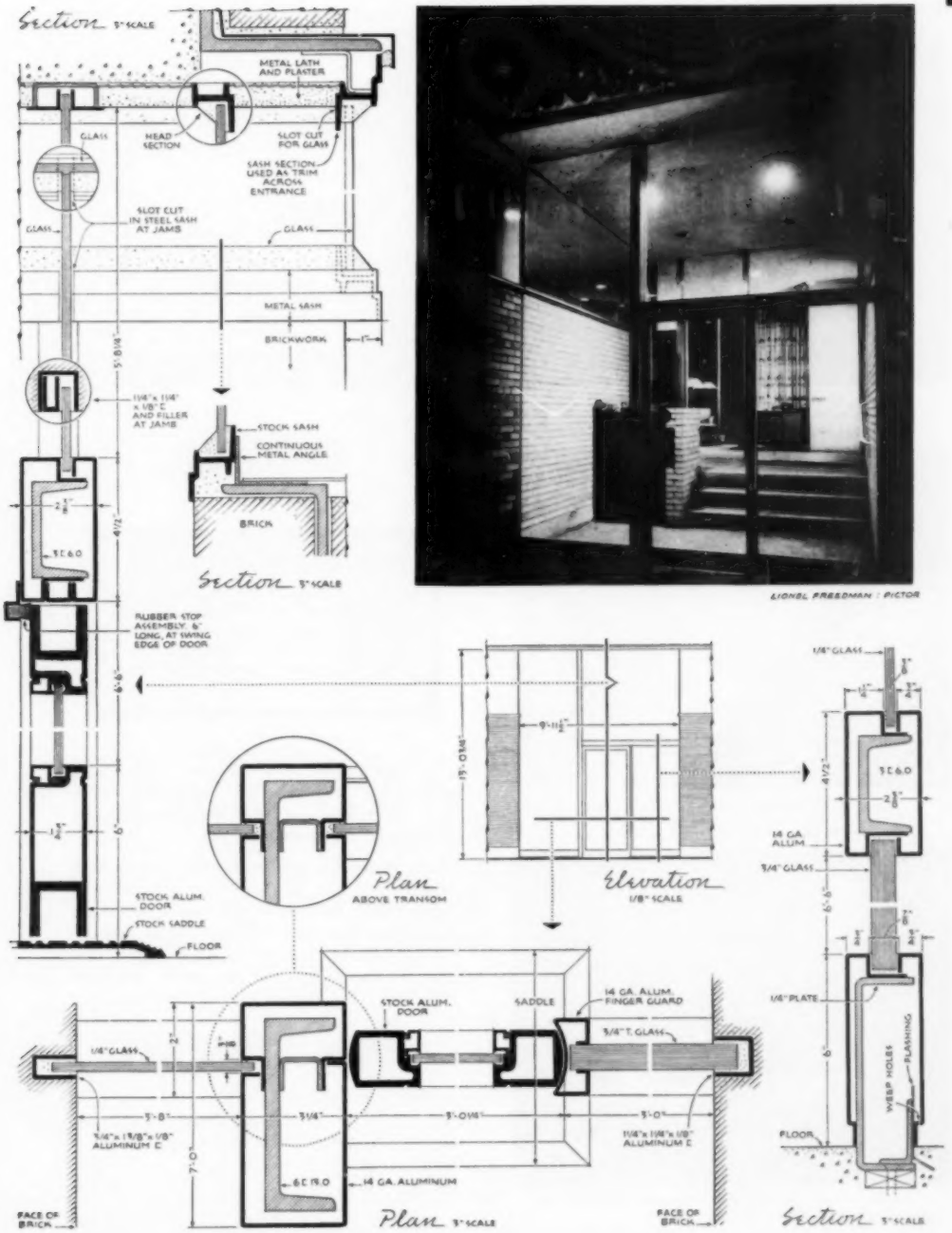
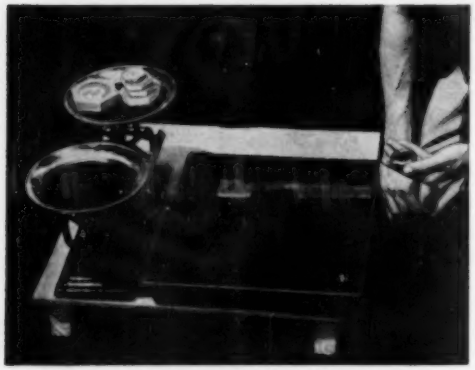
LIONEL FREEDMAN : PICTOR



ST. BARNABAS HOUSE, New York, New York

KETCHUM, GINA & SHARP, ARCHITECTS

GOOD BRICKWORK = GOOD DESIGN + GOOD WORKMANSHIP + GOOD MATERIALS



When placed flat in ¼-inch of water for one minute, a brick should gain not less than 5 grams (1/5-oz.) and not more than 25 grams (1 oz.)

A good bond was not secured here because the brick on which the mortar was spread had sucked the mortar dry, before the brick was laid.

A good bond was secured here because the mortar was not sucked dry too fast.

WET THE BRICK TO SECURE A WATERTIGHT BOND

WE SUGGEST THAT—

Brick taken from the scaffold should be tested for rate of absorption, as illustrated at top left. If the tested brick gains more than 1 ounce in weight, all brick should be thoroughly wet just before they are used.

A good initial bond between brick and mortar depends (1) upon the suction rate of the brick, and (2) the water-retaining capacity of the mortar.

If the absorption rate of the brick is too high at the time they are laid, they will suck the water out of the mortar too fast, even though the mortar has high water-retaining capacity. A thorough wetting of the brick just before they are laid is the only way to be *sure* they will have a low enough rate of absorption.

BRIXMENT

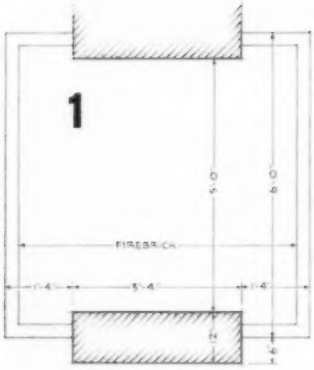
Brixment mortar has higher water-retaining capacity and stays soft and plastic longer when spread on porous brick. This helps secure a good, watertight bond.

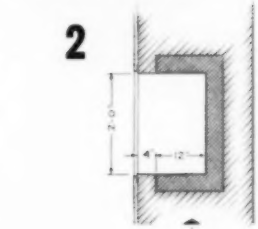
LOUISVILLE CEMENT COMPANY, Incorporated, LOUISVILLE, KENTUCKY

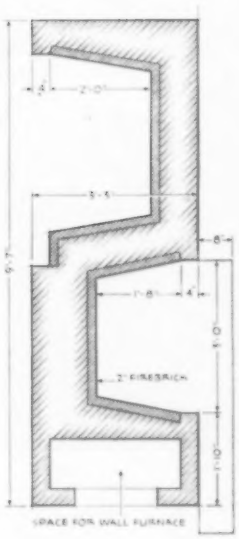
N. Y. Times

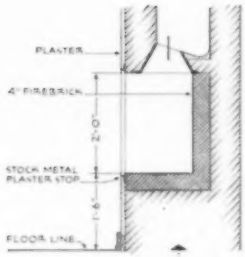
Pictorial Services

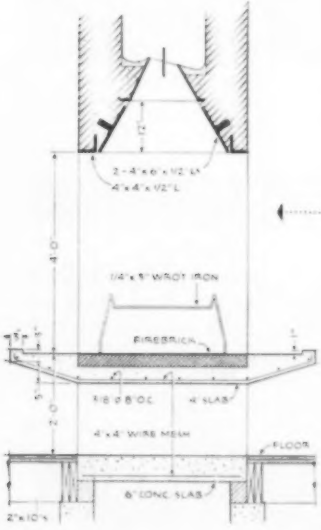
Julius Shulman



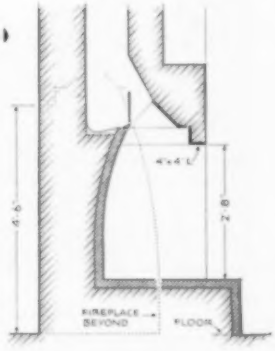








Sections 1/8"SCALE



1 **APFEL RESIDENCE, Harrison, N. Y.**
CALEB HORNBOSTEL, ARCHITECT

2 **GRANT RESIDENCE, East River, Conn.**
EDWARD D. STONE, ARCHITECT

3 **NESBITT RESIDENCE, Brentwood, Calif.**
RICHARD J. NEUTRA, ARCHITECT

NAIRN LINOLEUM

1. This installation in the kindergarten of the Moccassin School, Buchanan, Mich. clearly demonstrates the flexibility of linoleum to reproduce the architect's design for an interesting, special-purpose floor.

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NAIRN LINOLEUM

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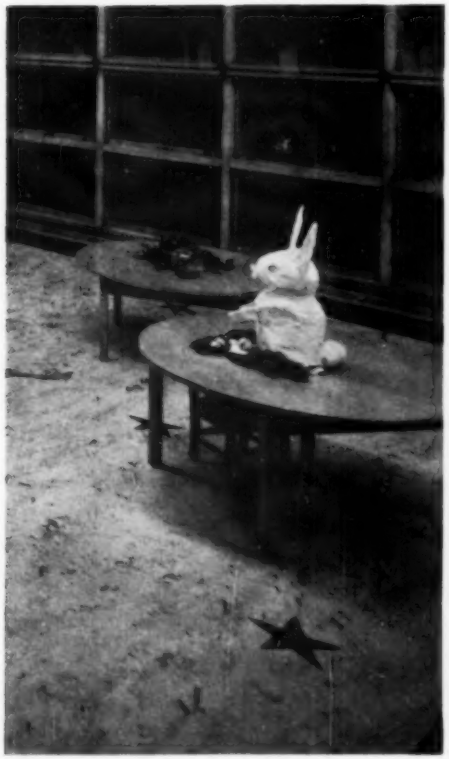
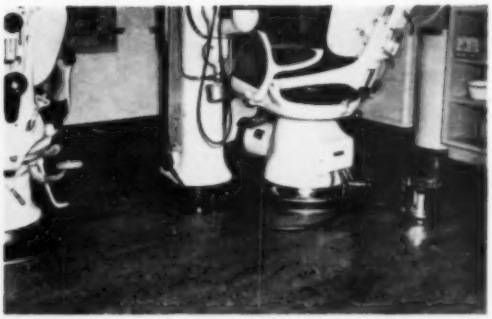
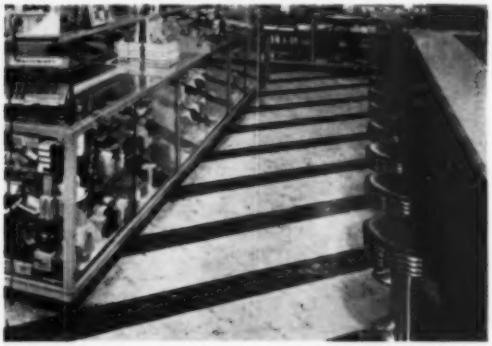
4-square features give you





2. In this dentist's office of Dr. Philip H. Wyckoff, Chicago, Ill., heavy traffic is concentrated in a specific area around the chair. Long life, lasting beauty and crevice-free cleanliness have made linoleum the preferred floor covering of dentists all over the country.



3. Easy maintenance of the linoleum floor is the keynote in the Rubin Brothers' Drug Store, Kearny, N. J. Despite all the heavy foot traffic around the soda fountain, foot marks do not show and the surface remains neat, bright, and attractive.

you need!

NAIRN

SATISFACTION GUARANTEED OR YOUR MONEY BACK

1 Long life

2 Enduring beauty

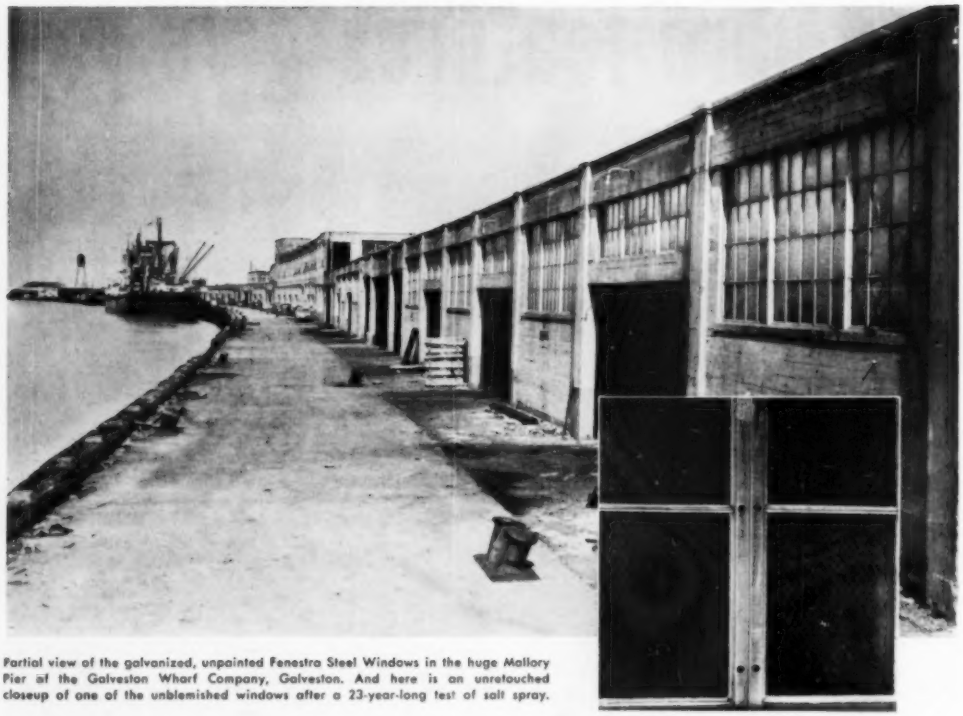
3 Easy maintenance

4 True resilience

for Floors and Walls

For your specifications:
"Nairn" Linoleum—
"Nairn" Wall Linoleum—
"Nairn" Asphalt Tile

4. In the cafeteria of the American Furniture Mart, Chicago, Ill., linoleum is especially effective because its resilience assures both easy, quiet walking and sure footing for patrons carrying heavily loaded trays. Smooth, crevice-free surface insures cleanliness.



Partial view of the galvanized, unpainted Fenestra Steel Windows in the huge Mallory Pier of the Galveston Wharf Company, Galveston. And here is an unretouched closeup of one of the unblemished windows after a 23-year-long test of salt spray.

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23 years right on top of the salt water and these galvanized, unpainted Fenestra* Steel Windows in the Galveston Wharf Company's Mallory Pier, Galveston, Texas,

. . . *look* like new (remember, they were made in 1927)

. . . *work* like new (they still open and close without a hitch)

They didn't rust a bit. And now Fenestra Engineers have developed a galvanizing system that does a better galvanizing job all around!

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Specially Planned Fabrication. To insure proper galvanizing, fabrication and assembly of window parts are especially engineered.

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Bonderizing. To give them a perfect finish, the windows are Bonderized and rinsed. (This also provides an excellent base for a decorative paint-finish, when desired.)

For further information, call your Fenestra Representative (he's listed in the yellow pages of your phone book).

Or write to Detroit Steel Products Company, Dept. PA-10, 2253 East Grand Boulevard, Detroit 11, Michigan. *ø

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Fenestra

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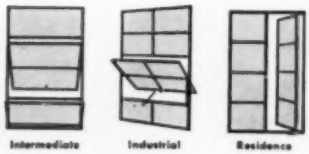

technical press

By JOHN RANNELLS

The sturdy Old English tradition of the open coal fire (as main domestic heat source) is on the defensive. It burns too much fuel for the heat it gives; it causes more ventilating than is needed for health—and that involves *more* fuel. It must have been somewhat of a shock to the British to learn that our extravagant practice of heating the whole house, rather than just one or two rooms, uses less fuel than their open fires.

A series of brief articles in *The Architects' Journal* (July 27, August 3, and August 17) points up some of the adjustment that is taking place in regard to heating and ventilating technology in Britain.

Whole House Warming (the title of the first article) describes a pair of houses built in 1948 at Stanmore, in Middlesex, especially to examine the possibilities of achieving comfort conditions in all rooms with a single heating system. The desired conditions were that the whole house be heated to 65-70F at one time, at another time to 55F, and at times, part of the house to 65-70F, and the remainder to 55F; that temperature distribution in each room be uniform; the heat supply controlled by thermostat and the capital and operating costs of the system reasonable. Two independent heating systems were installed in each house so as to get the maximum experience in meeting these conditions.

The four heating systems were: 1) forced warm air ducted system with low-level registers; 2) the same with the high-level registers on ground floor and low-level on upper floor; 3) warm air panel system with air circulating in a "closed" system between the ground floor ceiling and the upper floor; and 4) hot water radiator system, chiefly for comparison with the warmed air methods.

The system giving the greatest uniformity of temperature distribution with greatest flexibility was the forced warm air with low-level registers. This was able to maintain the whole house at 60F at all times, living room and dining room at 67F for eight hours per day, bedrooms at 67F for four hours per day, and provide 250 gallons of hot water per week. It was determined that the same amount of fuel in the traditional open fire with back boiler would accomplish less than half as much.

Half the battle in these Stanmore houses is the open planning of the main floor—a plan ordinary enough in this country but not usual in England. The compact two-story scheme helps, too. All this is in line with traditional warm air heating experience in this country, certainly the most economical heating that has yet been achieved. The faults of this system (too much ventilation and uncertain circulation of warm air) can be corrected by adequate weather-stripping and positive circulation by the use of a fan. It is interesting that the British are getting around to it at the same time that many of us are coming back.

Intermittent Heating (the second article) is a refutation of the idea that constant temperature in houses is good —"Whether it is economical, necessary, or even desirable to do so in the small houses occupied by 70 to 80 percent of our population is highly debatable."

This article argues for high-temperature radiation and comparatively cool air—"After all, we are quite accustomed to turn the light on and off as and when we require it, and careful people place their lights where they need them for reading, cooking, or eating; by the correct design of our houses and siting of heating appliances, there is no reason why we should not turn "the heat" on and off in a similar manner to provide

(Continued on page 112)

a better exterior finish...

Architect: Burton Ashford Bugbee, New York, N. Y.

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technical press

(Continued from page 111)

economically the desired comfort conditions where and when required."

This sounds logical but it is open to the argument that an Eskimo parka of reindeer hide answers the problem almost as well as the recommended spot-heating. The editors of *The Architects' Journal* must have felt this way too, for they illustrate this article with a drawing of a grim-visaged gent facing an electric radiator while backed up by a metal reflector—sort of a later XXth century version of the colonial wing chair. The traditional Eskimo igloo environment, by the way, is high temperature and no clothes.

It is true, as the article points out, that a lot of fuel goes into warming houses when we don't need the heat and that temperatures in an occupied house rarely fall below 45F when the house is well insulated and damp-proof.

There will be better answers to these problems next year when the results will be published from a group of houses which were set up to determine actual living conditions; the tenants pay for their own fuel and are free to use it as and when they choose. "It is the greatest comfort at the least cost, including capitalized cost of fuel, that matters."

Mixed Heating Systems (the third article) argues for background heating, plus quick-response heating for meeting the needs when the space is occupied. This split system appears ideal but it takes two kinds of heating systems and that may not be economical. Also, the controls are necessarily complex. Several combinations of convection and radiant systems are possible. If we were just alert enough to control the conditions ourselves we could have comfort, indeed. What could be better than background warming *plus* an open fire?

Perhaps the next best thing we could do, to begin to establish our own understanding of thermal comfort, is to follow Dr. Winslow's advice and have a thermometer in every room and to watch it.

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FIRE INSURANCE: MAXIMUM . . .
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"There was never any guesswork about elevator operation."

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p/a REVIEWS

BOOKS

MODERN SWITZERLAND

Switzerland Builds. *G. E. Kidder Smith. Albert Bonnier, 605 Madison Avenue, New York, N. Y., 234 pp., illus., 4 full-color plates. $7.50*

George E. Kidder Smith, who is deservedly celebrated for his photography, shows his versatility by the creditable piece of work he does as author, photographer, and layout artist of *Switzerland Builds*. Not only is the book well written and well organized, it is beautifully produced. The (four) full-color plates and the numerous black-and-white engravings are only two reasons why this book has such tremendous eye appeal; others are the paper, the printing, the binding, and Paul Rand's jacket design.

Smith devotes the first third of his book to a consideration of native architecture and he hearkens back to these early forms throughout the work. The remaining two-thirds of the book is devoted to a thorough survey of the best contemporary work in Switzerland. Included, of course, are the famous churches by Karl Moser, Werner Moser, Baur, Metzger, and others. How Pope Pius X indirectly played a part in the development of contemporary church architecture in Switzerland and elsewhere is explained in the author's introduction to church architecture. The frontispiece is a full-color reproduction of the interior of Werner Moser's Reformed Church in Zurich-Altstetten while Professor Karl Moser's St. Antonius in Basel is one of the eight churches described in the book. These are the contemporary churches only; earlier in the book the author shows several churches of earlier periods.

Since the book is a complete survey of Swiss architecture, there is a large section on housing. The Doldertal flats in Zurich, designed by Alfred and E. Roth, with Marcel Breuer as associate, are remarkably fresh despite their 13 years. Other apartment buildings and numerous single-family dwelling units of various types are included in *Switzerland Builds*.

Because the Swiss schools looked so neat and clean, this reviewer had to refer to them twice before he could remember any children in the photographs, yet there they were. In every picture the children are in orderly rows, their posture in every case is perfect and none looks as though he had ever heard of a spitball, all of which is in shocking contrast to children in this country. Evidently, too, this extreme orderliness on the part of the children makes Swiss school buildings look different from ours. Of course a great part of the difference is in the fact that all the Swiss school buildings shown are well designed, albeit, perhaps, a little too neat and uncluttered, a little sterile.

Swiss sanatoria, which are well represented in this book, are familiar to Americans. Not so well-known is the fact that the Swiss also have some excellently conceived general hospitals as well as some that Smith describes as "'limited service' hospitals for lengthy convalescence and for chronic patients (which) relieve the general hospitals of these almost permanent burdens."

A separate section of the book is devoted to open-air baths because the Swiss seem to have a sensible (as usual) preoccupation with exercise and recreation and even go so far as to make

(Continued on page 116)

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(Continued from page 114)

swimming compulsory in their schools. Many of the baths shown are parts of larger recreation centers with restaurants, bath houses, and other such facilities.

The public buildings are interesting for their tremendous variety. Included are an office building, convention hall, market hall, covered stadium, and library. Among the industrial buildings shown are a steam plant, newspaper plant, incinerator, and several factories.

The over-all effect of *Switzerland Builds*, perhaps, is to remind one of Ludwig Bemelmans' statement in *The Best of Times*: "The feeling on crossing the Swiss border, outward into the other world, is somewhat like this: You are the father of two daughters, and have just visited the one who married well and is successful in all things; her house is in order and there is no cloud to worry her. You are glad enough that her life has turned out so nicely. But then you go back to the other daughter, the unhappy and troubled one, and she is the one who needs you, she is the one you love."

Yet the successful daughter, or, perhaps, her husband, should receive a little credit from Bemelmans just for being successful; things have not always been so easy. Smith, in the preface, points out a few of the obstacles the Swiss have had to overcome to produce the beautiful buildings shown in this book. "The Swiss earth," he says, "yields precious little except some stupendous scenery and harnessable water-power. Its surface is normally not even sufficient to grow the grain needed to feed its population; its depths contain no coal, no oil, few metals of value . . . Wood can be had, but not in the amounts needed, so a large proportion is imported." This lack of resources has in no way inhibited Swiss architecture or building. From earliest times the Swiss have displayed a genius for making something out of their "precious little."

In this book the author catches the spirit of Swiss architecture and records it faithfully in words and pictures. It is the kind of book all architects will want to own and undoubtedly a great many people will become Switzerland fans as a result of reading it. W.W.A.

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BOOKS RECEIVED

The Work of Oscar Niemeyer. Stamo Papadaki. Reinhold Publishing Corp., 330 W. 42 St., New York, N. Y., August 1950. 219 pp., illus. $8.50

Creative Vision in Artist and Audience. Richard Guggenheimer. Harper & Bros., 49 E. 33 St., New York, N. Y., 1950. 170 pp. $3.25

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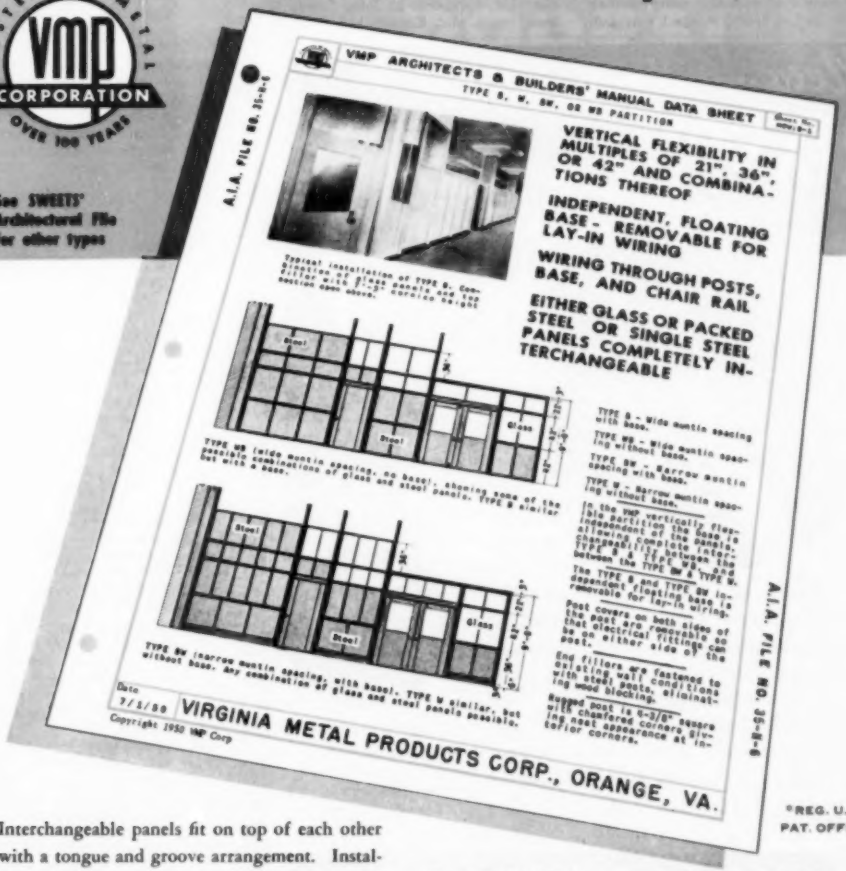
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out of school

By CARL FEISS

This article is about the teaching of architectural and planning design. Several people have suggested that I get around to it. Those of you who have taught, or have been taught architectural design, can skip this issue and several more to come which, from time to time, may deal with this controversial and stimulating topic. While I may not arrive at final conclusions in this issue (or for that matter, in the next 40 years), it does seem about time to get started.

I have been hesitating to give a definition of the word "design" because there have been so many stabs at it in the past. Leonardo to John Dewey is a long jump and Kepes* has devoted a rather complicated but fundamental attack on the word. The late, great Moholy-Nagy made the attempt with both words and objects. In the field of art—painting, sculpture, the handicrafts, and the limitless industrial world—design is the business itself. Nature is also a well-known designer even though untrained in either art or architectural schools. Nature, while potentially the most competent teacher of all, even of architects, has not been accepted by many because of her highly radical approach and her thoroughly non-academic logic. A natural approach to architectural design training is the theme of this paper.

●

Irrespective of what design really is, it is a highly personal, subjective creation. The fundamental psychological reactions which each of us attach to visual contacts with lamp shades, neckties, or cathedrals are our own and involve our own personal genes and chromosomes; the physiological sensitivity of the ocular nerves to light; and the subconscious effect on your prejudices of the nursery wall paper of your childhood and your Mammy's choice of antimacassars. You are prejudiced, every one of you, and my launching for the first time into pedagogical methodology will will take into account your desire to make individual choices, even though architectural and planning education will always require some averaging. It is obvious that no matter how desirable, no student can be given the continued individual attention his likes and dislikes require; and for that matter, the same thing goes for the professor.

Do we need to teach design in order to teach architecture and planning? Before discussing the question, I should explain the linking of architecture *and* planning design here. Granted that planning in scale is greater than the average architectural concept, you may remember that in the past I have emphasized the comprehensive quality needed in architecture and the absence of a dividing line between the scale of architectural plans *per se*, group plans, city plans, metropolitan plans, and regional plans. I cannot emphasize too much the fact that the design of human environment at any scale contains the identical need for social and economic consideration and that the design objectives for the physical layout of environment require design training and

(Continued on page 128)

*The Language of Vision—Georgy Kepes

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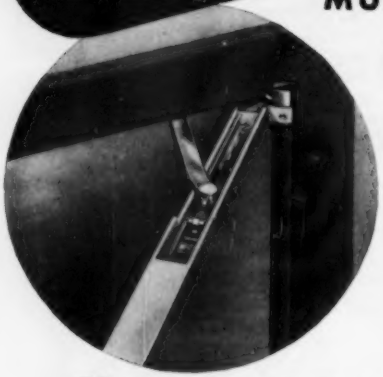

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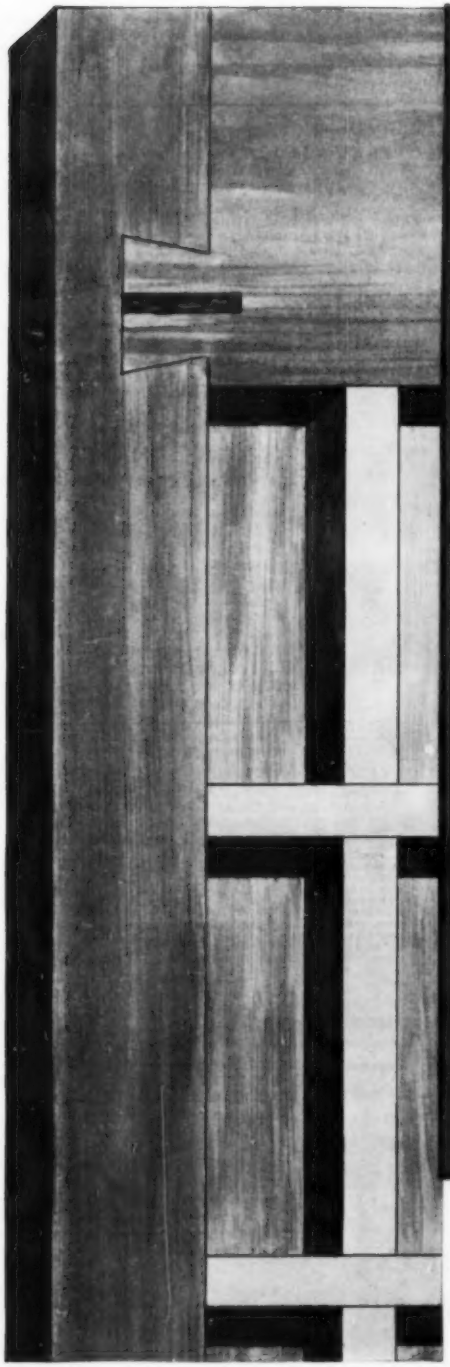

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out of school

(Continued from page 118)

design competency. This is not intended as a belittling of, or an omission of, the basic social sciences. Even the most limited concept of architecture must take into account human needs and the methods of satisfying them. But the social sciences cannot build, cannot create the physical changes required in their own ambitions. While the social sciences *must* set the programs, the goals, and the human objectives; the design arts and the construction sciences are concomitant requisites to the carrying out of the programs. It is a teamwork job with no known limits to social objectives or the design competencies needed to achieve them.

In stating the reasons for combining architecture and planning, I seem also to have made a stab at justifying the need for design. Let us proceed further with this part of our discussion. The question was on the necessity of teaching design. There is, of course, no need to discuss methods until we are sure that we have to. The question within the question is, "Can design be taught?" Sometimes, as I have sat over a student's drafting board and looked at the dismal squiggles purporting to be a graphic representation of an idea, I wonder. And then the earnest look, the worried question, and I know that design somehow has to be taught: or at least, for the sake of the youngster, I should try.

●

Aptitudes We know that we could build a building, or for that matter a city, without drawing a line. It could all be written in books. Architectural drawing and the delineation of design are only the manual results of our attempts to use visual aids as a short cut through the all-too-difficult world of intercommunication. All the work on the drafting table is only a means to one end—showing in the simplest possible graphic terms an idea germinated in the brain. Until someone invents a system of practical telepathy or thought transference, the very cumbersome systems of speech, writing, and graphic delineation remain our most common means of contact. Of the three, graphic delineation requires the most exact and painstaking training in which aptitudes must play a major role. While nearly everybody can speak and write with sufficient dexterity to get along in a world where speaking and writing (including reading) are expected, graphic delineation remains a means of expression and communication available to a very limited few. Among this limited few, there are many who attempt to use this media and are unable to succeed in it because of a congenital lack of aptitudes.

There are several drafting and design aptitude tests which are in use to a limited degree among the architectural and planning schools. Some discussion of these tests and their results has occurred at annual meetings of the Association of Collegiate Schools of Architecture, but I am not aware of any finite decisions or experience. I hope someone will write in with facts. I do believe that every attempt should be made to determine aptitude at the earliest possible date. Boys with design ideas but without innate skill require special handling and boys without either should be given every opportunity to explore other careers before time and happiness have been uselessly expended. For the ability to cook up ideas which are both sound and attractive requires inventive genius, which cannot be taught, and the brain-nerve-hand-eye contacts, which can be trained if they are psychologically and physiologically healthy, but also cannot be taught. These contacts often lie latent and dormant in a youngster, who may incorrectly appear to indicate aptitude deficiencies.

Every modern school of architecture and planning should study graphic and design aptitude testing. Only through a large body of experience are we going to be able to accomplish the first important step in design training, which is

(Continued on page 122)

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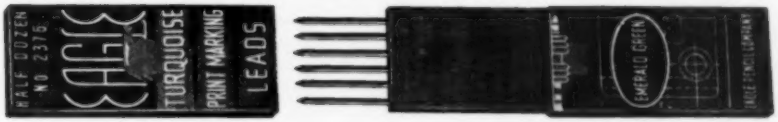

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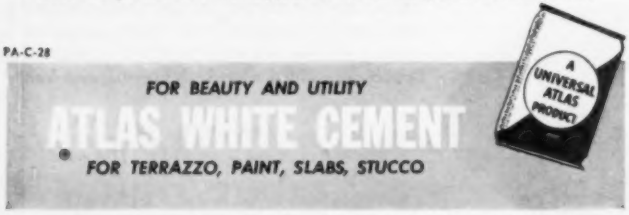

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out of school

(Continued from page 120)

the elimination at the earliest possible date of those prospective students who are and always will be unable to qualify. Out of fairness to the boy without inherent aptitudes, out of fairness to other students, the teachers, the school, and the long-suffering public, it should become a standard first step in the training method.

Properly speaking, aptitude tests should be given at the time of first application for admission. But my own experience with such tests leads me to believe that no student should be denied admission on the basis of low scores or failure. The tests are still too primitive for conclusive proof. However, a suspect student should always be *warned* that he may face difficulty; and the teachers of the elementary courses in drawing, graphics, and design should be advised, as well. If by the end of the first school year, or even earlier, the results of the tests are confirmed, career counseling can begin with the least waste of time and tears. If there is still doubt, the student should be so advised at the end of the school year and he should be given the choice of taking the chance of continuing, or changing at that point.

●

Attitudes If I were to walk up to you and say, "That's a lousy taste in neckties you've got," you would probably haul off and sock me. We are all extremely sensitive about our personal taste in wearing apparel, home furnishings, and our daily artistic choices. And every day and almost every minute of the day we are making such choices, knowingly or not. Since we may conclude that for the time being we have no other better means of architectural design instruction than part-time on the drawing boards, discussion on matters of taste and choice requires skillful handling. Plan logic will call for esthetic perception as clearly as choices in external appearances. The instructor is always faced with the problem of wielding the big stick of his own choices and preferences or allowing the novice to flounder on his own. Too many design teachers enjoy the sense of power and selfish satisfaction which comes from seeing their own ideas on someone else's design sheets. I once had an instructor who gave me a 90-foot "crit"—90 feet of tracing paper on which he had sketched innumerable solutions. It took two hours, during which I sat beside him (eating goobers). He didn't speak except to ask for a match for his pipe (which stank) or more pencils or more paper. At the end of the two hours, with the help of an admiring audience of some 10 or 15 boys, we pinned the whole scroll up on the wall, festooned from window to window. Then, pacing back

(Continued on page 124)

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out of school

(Continued from page 122)

and forth along the line, the maestro made his choice. I then drew it up (using proportional dividers) and got a third mention. But it was a glorious feat to behold. The still, small voice whispers, "Was it good instruction?"

Within the limited experience horizons of the average student entering architectural schools, design vocabulary is non-existent. The development of such a vocabulary is the immediate objective of the instructor in the early years. It is wrong to expect, and poor teaching judgment to require of the beginning student, full freedom of choice in his search for a vocabulary. He needs to be guided into reasoned choices and to be informed of the nature of his emotional choices as well. Skill and craftsmanship in teaching are at their highest premium at this moment. The best teachers are needed at the beginning, and not at the end of the training period, whatever its length. Here again we have often made mistakes, since most schools and most teachers in schools like to have the big names attached to the polished results of senior or graduate work. Too often they impart only a high gloss on poorly tanned leather, that quickly loses its luster.

Drafting room instruction requires what doctors call a "bedside manner." The student just out of high school is unfamiliar with the whole firmly established system of architectural instruction. Personal criticism is new—and often resented. Much valuable contact time can be wasted in the wrong start. The highly specialized systems of instruction should be explained in detail during the first week, with plenty of opportunity for student questions and friendly discussion.

The delicate nuances in design instruction which build up between student and teacher, also student group thought and the teacher, require skillful structural knowledge. Classroom or drafting room reactions to a personality or a method are in continued delicate balance. No teacher insensitive to this balance can avoid tipping the scales in the wrong direction and landing in a heap of trouble. Architectural schools, and in particular their design studios or drafting rooms, are notoriously emotional and full of articulate prima donnas or subterranean murmurs. There seems to be no escape from the situation as long as student and faculty continue to work under high pressures, and the whole theory of design continues in a state of flux.

No one yet has been able to determine the proper faculty-student ratio for design instruction. The wealthier, the highly specialized, and the upper- or graduate-level schools pride themselves on personal instruction and the intimate relationships possible only in a small

(Continued on page 126)

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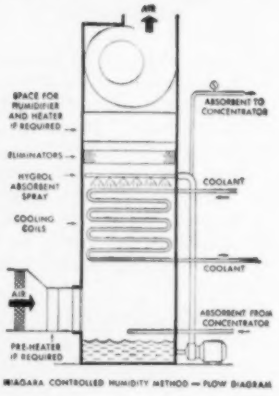

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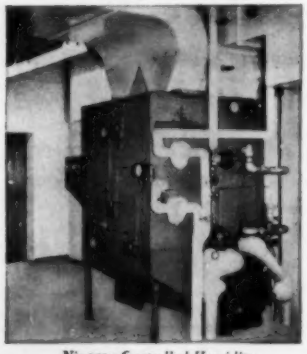
Niagara Controlled Humidity Air Conditioner

The diagram shows how filtered air is dehumidified by passing thru a spray of "Hygrol"—a liquid absorbent which removes air-borne moisture. This liquid is hygienic and non-corrosive; it contains no salts or solids to precipitate and cause maintenance troubles. It is continuously re-concentrated at the same rate at which it absorbs moisture, providing always the full capacity of the air conditioner, automatically.

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out of school

(Continued from page 124)

number of students per faculty system. This is, of course, an objective of all schools at all grade levels. It is an objective difficult of achievement in most state institutions and in many of the private ones where tuition income rather than endowment income is a major source of support. Few students are acquainted with the usually high costs of administration of schools of architecture and planning. When design instruction suffers from faculty overloads, it behooves the chief administrative officer to inform the students of the reasons why. Not only is this explanation due the student, but also the design faculty needs such protection. In a number of schools, at this time, a design instructor may have as many as 30 or 40 boys to train. Say he is working with 30: with luck he will have 4 hours a day for instruction or 8 minutes per student. It is impossible to go the rounds, limiting yourself to 8 minutes per criticism, and come out with any sound results. The choice, therefore, is to develop group instruction with quickie sketch crits or visit with a student at a maximum of two 20-minute periods per week. An experienced instructor knows how to combine and permutate his time. It takes skill to avoid the almost (though not quite) unconscious gravitation to the best students' table every day. It takes skill to keep up the appearance of interest in the dull student or the dull solution. But design instruction, as we know it, is a highly personalized method, taxing on the imagination and patience. Only the truly devout should ever essay the pleasure.

I mean pleasure! The teaching of architectural and planning design is a rewarding experience. I have not taught medicine or law or biochemistry, but I have taught, besides several grades and types of design, a great variety of subjects, including urban sociology, public administration, and the business cycles in the building industry. There is something about the teaching of design that is a continued thrill. I suppose you have to want it and have to believe in teaching. I have always felt that if you did not believe in teaching you had no faith in the possibility of a better world.

●

Platitudes Design teachers always have and probably always will continue a search for a shorthand of architectural expression. The long career of the classic orders in architecture has been due to the ease with which certain design cliches could be converted into formulae. Our friends, Vitruvius and Vignola, were most adept in the mechanization of classical design principles. The ease with which the modular dimensions and the standardized principles of design relationships could be adapted and var-

(Continued on page 128)

SNOW MELTING

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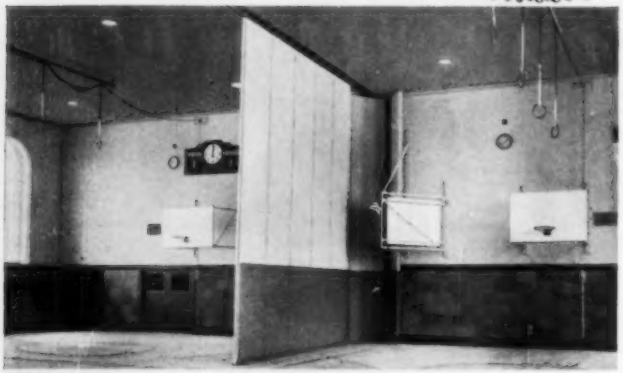

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Because of its high standard of excellence and performance, the R-W DeLuxe fully automatic electric soundproof folding partition is now specified by leading School Architects and demanded by progressive Boards of Education as the best solution to current problems of space and expenditure.

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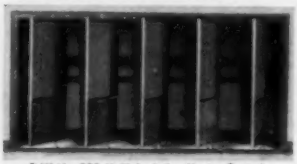

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out of school

(Continued from page 126)

ied for a multiplicity of formulized objectives, extended the life of the classical forms way beyond periods of natural intellectual expression into the artificial climate of history and dogma. I have not recommended, and do not recommend here, the blind search for substitutes or the acceptance of highly personalized and often emotional substitutes. In architecture, as in music, one may listen to and enjoy the creations of a master performer. Yet great musicians do not grow from the imitation of great performers, but rather from new and individual interpretations of the basic music itself. The natural elements of architectural and planning design—the space provided for human use, the use of light, air, color, materials, form, textures, nature, and growing things, including climate and all the other innumerable, well known letters that make up the elementary alphabet of design—require planned combination to make a strong architectural form. The search for new form in architectural and planning design is now some 60 or 70 years old. In this search for means of getting away from the classical design expression, we are substituting these natural elements of architecture which I have mentioned immediately above. For those artificial elements which formed such a major part of the preliminary training of our students during the formative years of architectural and planning education, we are also searching for an alternative. While we are not entirely converted from these oldest of elements, while we have not yet stripped ourselves of the veneers which concealed the sound structure of design and while we have often substituted for these veneers equally artificial and vulnerable platitudes, it is safe to say that great progress has been made in a return to the natural and fundamental logic of human requirements and the resources at our disposal for the satisfying of these human requirements.

In this attempt to reconstitute architectural and planning education along natural lines and in the sloughing off of arbitrary formulae which had become a habit pattern, it was natural that for a considerable period of time chaotic training conditions would replace the ordered rules within the schools of trained platitudes. We are not yet out of this chaotic situation, partly because schools are still in periods of transition and partly because no new orderly method of training with the new alphabet has yet developed. Adjustments within the standardized frameworks of school or curriculum formulation, credits, hours of drafting room study, and all of the other multitude of elements of areas within teaching practice have been disturbed or uprooted. It is natu-

(Continued on page 130)

Electrical Conveniences

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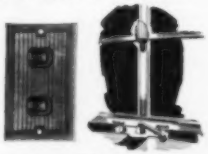

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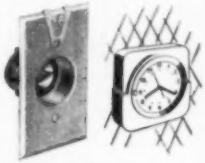

CLOCK OUTLET

Connecting clock electrically, this outlet is concealed by the clock. No wires exposed. Recess for plug cap provides flush job.

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Flush, polarized outlet makes range connection easy. Neat appearing and inexpensive. Surface types available.

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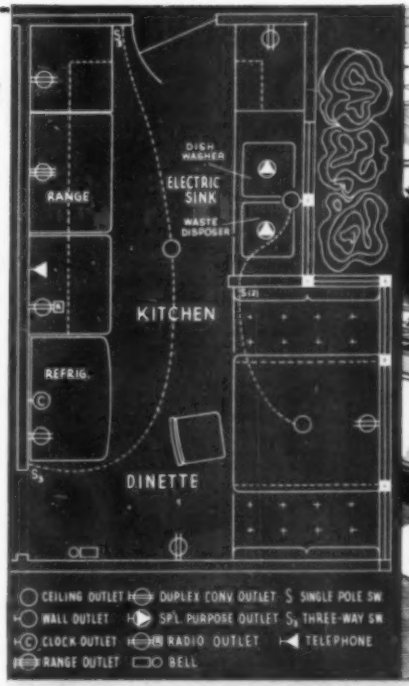

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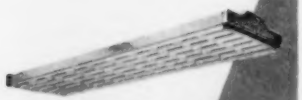
See Sweet's Architectural File Section 31A-12



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out of school

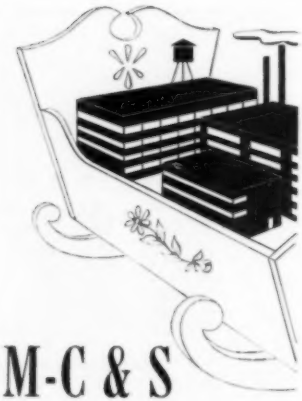
(Continued from page 128)

ral, therefore, that some of those who are less courageous or perhaps more humanitarian in their approach to that human guinea pig, the student, should object most strenuously to suggestions that changes should be made in curricula; particularly in the teaching of design, until such time as new formulae are developed, resulting from what I am here calling "the natural approach." However, it should be obvious that we cannot pull out of thin air a solution to the complex problem of the use of the natural alphabet of design elements. It is going to be only through trial and error that we will be able to achieve some semblance of order in sequence of training. It is my firm conviction that while we may develop order and sequence by the use of the natural elements of design, we should be able to avoid formulae which create both platitudes, dullness, and artificiality from which we are just now escaping.

•

In order that we may ascertain just what is happening in this conversion process, in a column to follow this one, I have been planning a symposium made up of discussions on the teaching of basic design from several widely separated schools which have been experimenting long enough now to have achieved some recognition and at the same time to have accomplished a good part of the objective of transposing their programs.

In the meantime, I would like to urge that all of you who are interested in this subject, consider seriously how well acquainted you may be with this conversion process and I would be happy to receive from you expressions of opinion on the matter. I might mention before closing this column that we are beginning to get the necessary documentation on experiments in the training for the use of the natural elements in design. Most of us are familiar with the Bauhaus, with the Black Mountain College experiment, with the studies at the Chicago Institute of Design, with the design work of the C.I.A.M., and with the work of other highly intellectual and sophisticated centers where much probing has been done into basic concepts. What interests me more here is an actual delving into the effect of such exploration as has been conducted in these institutions on the more standardized educational processes within the 60 or more architectural and planning schools in the United States, which have grown up under the classical formulae and certain standardized traditions of teaching. This is something which no A.I.A. educational survey is going to uncover. I, for one, hardly feel myself competent to judge the changes that are now taking place in design training in every school.



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TOP PHOTO shows expensive materials installed at high labor cost. Water can seep through masonry joints into the parapet wall, and also blow up under the loosely mounted flashing and built-up roofing. Freezing weather will break open the masonry joints, and the wall will start to crumble. An installation such as this, costly to begin with, is doomed to a lifetime of joint recaulking and other maintenance and repairs.

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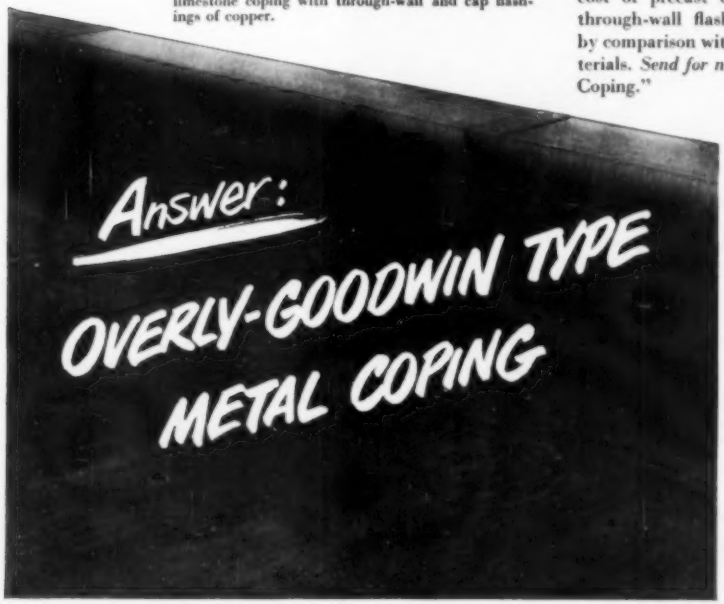

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it's the law

By BERNARD TOMSON

The comments made by Henry Tideman in his letter in VIEWS (September 1950 P/A) apparently refer to my column in the June issue of PROGRESSIVE ARCHITECTURE. His interpretation of the views contained in that column is not quite accurate and I should therefore like to restate my position.

The June column referred to the Michigan case of *Sheill* v. *Howard* wherein was held invalid a contract between architect and owner which provided as part of the architect's services that he prepare the contract between owner and contractor. This decision was based upon the premise that in agreeing to prepare the contract between owner and contractor the architect was illegally practicing law.

My recommendation, therefore, was that the contract between the owner and architect make it *the responsibility of the owner* rather than that of the architect to draw contracts and other legal papers. The purpose of this recommendation, of course, was to avoid a challenge to the legality of the owner-architect contract and would seem under the doctrine expressed in *Sheill* v. *Howard* to afford at least minimal protection to the architect. The new A.I.A. forms also have attempted to meet this problem by stating that the architect will render "*Assistance* in preparation of . . . contract documents . . ." This phrasing supersedes "the *drafting* of . . . contracts."

●

In my column, however, I emphasized that "*this does not in any way prevent, prohibit or inhibit the architect from supplying the necessary technical information to be inserted in the contract, or from passing on the matters contained in the contract with respect to their accuracy or sufficiency, from the architect's point of view.*" I might add that this does not mean that either the owner or architect need *employ* an attorney. But my own opinion is that in a matter as financially important as most construction contracts are, not to do so is hazardous and unwise.

The average owner in buying property and undertaking construction is probably entering into one of the most important business transactions he has ever undertaken. It is not proper to compare such a transaction, as does Tideman, to the purchase of a pair of shoes or a lunch. The writer knows of *no comparable* professional or business transaction in which the persons involved do not consult attorneys as a matter of course before making any commitments. Contracts are the specialties of lawyers, not architects. There can be no greater waste of "human productive capacity" than that experienced in the time and money-consuming process of litigation, or disputes which do not reach the stage of a law suit, resulting from contracts improperly drawn by laymen. An owner, whose title has been impaired by liens placed against his house by subcontractors or materialmen because a defective contract did not afford him full protection, or an architect who, because his agreement was "verbal," settles for a fraction of his

(Continued on page 134)

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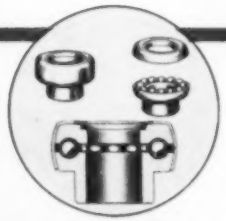

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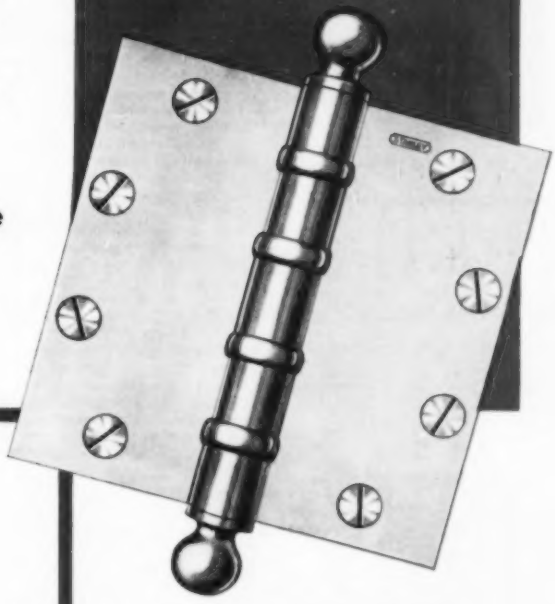
. . . THE HINGE THAT WON'T WEAR OUT



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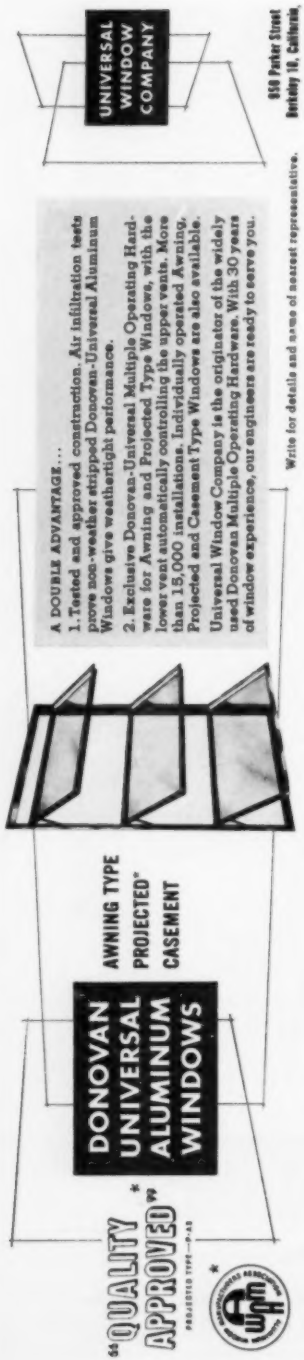
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it's the law

(Continued from page 132)

fee (a not unusual situation) should take sharp issue with the suggestion that the advice and services of a competent attorney constitutes "featherbedding."

•

Tideman makes the statement that, "The contracts here under consideration are those considered to be of a routine sort, which involve no moot points." If he refers to contracts concerning the architect-owner relationship, previous columns should have fully demonstrated the fallacy of such a conclusion. In February 1948 P/A this column discussed the various terms and conditions essential to a definitive owner-architect agreement. The liability of an architect has been considered in these columns in relation to state licensing requirements (August 1948 P/A), underestimation of costs (February 1949 P/A), and negligence of the architect in the performance of his contract (May 1949 P/A). Specific recommendations for improving the A.I.A. contract documents in order to insure maximum protection to the architect have been made in reference to arbitration clauses as a means of settling disputes (March 1949 P/A), provisions covering retainer fee, periodic payments during the preparation of preliminary studies and working drawings, definitive percentage of cost agreements (April 1949 P/A), specific coverage of all contingencies as to compensation (January 1950 P/A).

If Tideman refers to the owner-contractor agreement as routine, he is in error. Many contractors, unlike architects, employ attorneys or rely on "house" counsel, because they know that to treat each contract as routine could very easily result in financial disaster. See also the column in March 1950 P/A discussing the decision in *U. S.* v. *Moorman*. There, perhaps, the contractor did not have a lawyer when he signed his contract, but certainly the United States Government did.

•

It may be the custom for architects not to use lawyers, but certainly it is not the custom for owners who are business men or for contractors not to do so. If we assume, however, that such is not the custom, custom need not be slavishly followed if the exigencies of our economic and social environment call for a change. This writer is convinced that the interests of the architectural profession can best be promoted by intelligent and continuous adaptation to contemporary progress and needs.

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C — Black etched markings
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Pictured here is the Roe Steel Tape #302 with polished chromeplated, sturdy welded steel case. Other Roe models feature cases in handsewn leather, and in metal-banded leather and leatherette. They have a reinforced rust resistant liner, precision winding drum, flush-folding handle, press button center and roller mouthpiece. All are available with 25, 50, 75 or 100-foot tapes; feet in inches and eighths, or in tenths and hundredths.

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Authentic colonial style brass knocker. Instead of knocking it sounds two melodious chime notes.

Finishes: *Polished brass knocker — ivory enamel chime.*

Dimensions: *Minimum space required for mounting: 8¾" high, 3" wide.*

Mounting: *Fits doors from ½" to 2" thick. Only one ⅝" hole required in door.*

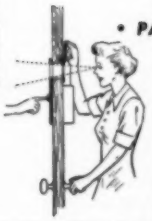
- **NATIONAL MODEL**

Push button type, ideal for home or apartment use. When the conventional style button is pressed, it sounds two harmonious notes in succession.

Finishes: *Polished brass push button plate — ivory enamel chime.*

Dimensions: *Minimum space required for mounting: 7⅜" high, 3" wide.*

Mounting: *Fits door or door frames up to 9" thick. One ⅝" hole required.*



- **PARKCHESTER MODEL**

Push button type, similar to National Model, with addition of a self-locking lookout window and name-card holder. Sounds two resonant chime notes. All mounting screws are concealed.

Finishes: *Satin brass push button plate and lookout window — ivory enamel chime.*

Dimensions: *Minimum space required for mounting: 9¼" high, 3" wide.*

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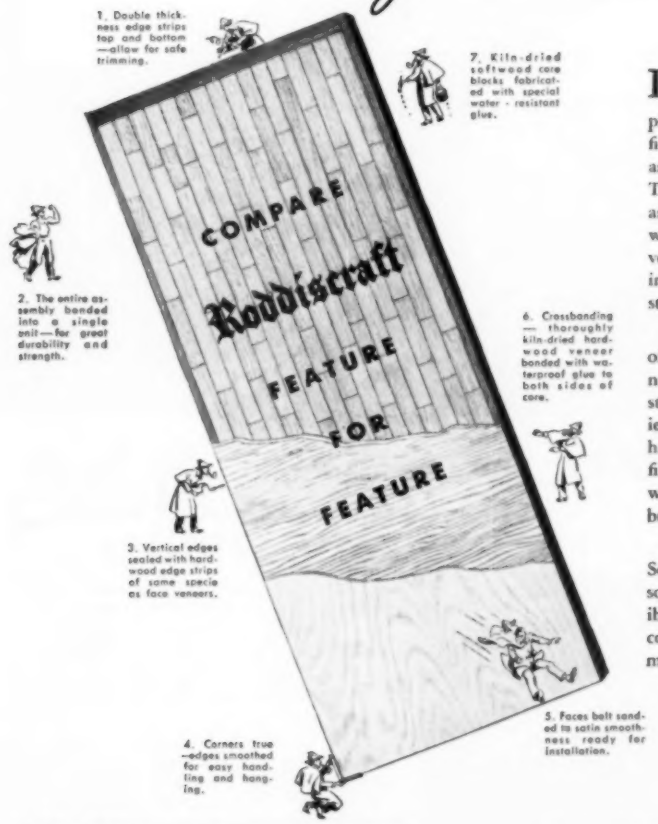
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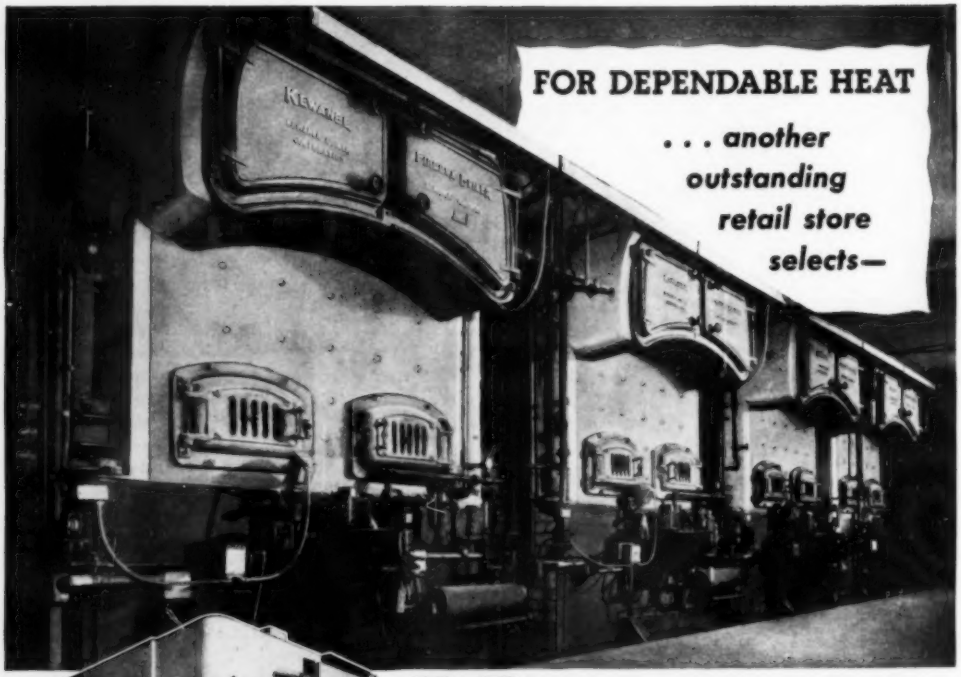

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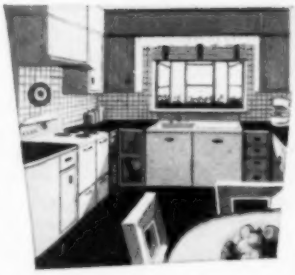

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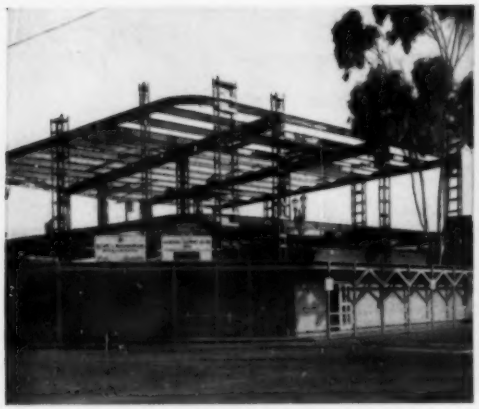

Fig. 1. *All welded (112 ton) framework for the Associated Telephone Company Building, Laguna Beach, California.*

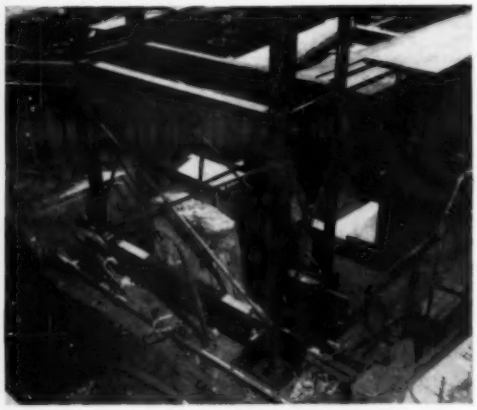

Fig. 2. *Open box column construction fabricated at low cost from plain angles, plate and bars.*

By **Maurice Sasso, Consulting Engineer**
Los Angeles, California

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Fig. 3. *Arc welding girder-to-column. This is the only weld where a scaffold was used.*

Fig. 4. *Welding beam-to-girder. Full continuity increases resistance to bending and shear.*

Fig. 5. *Beam and girder connection made through open box column permits easy downhand welding.*

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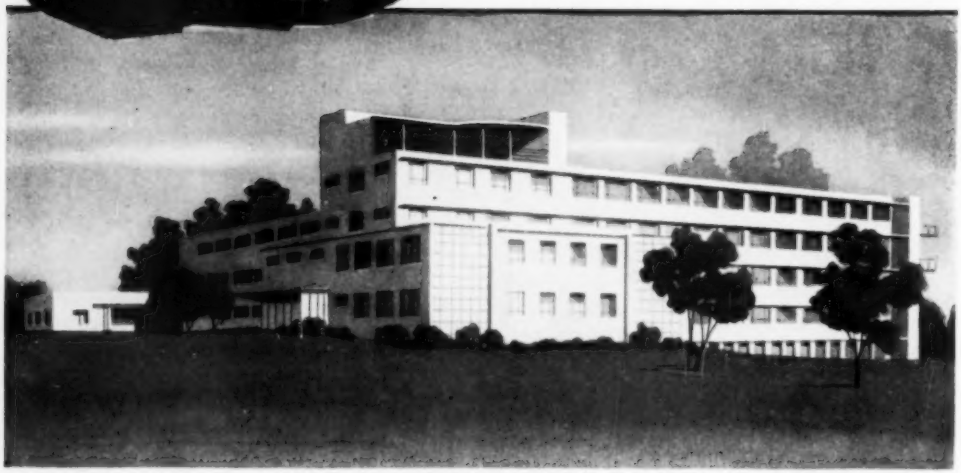

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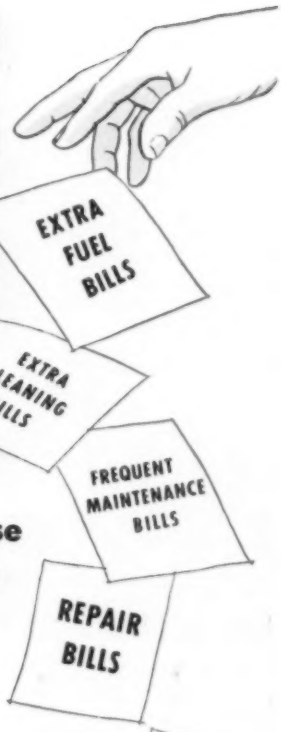

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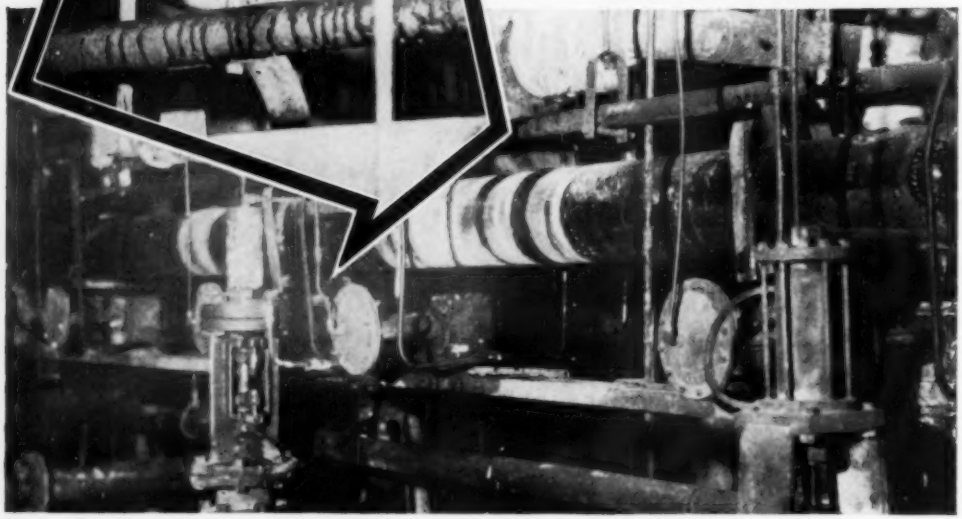

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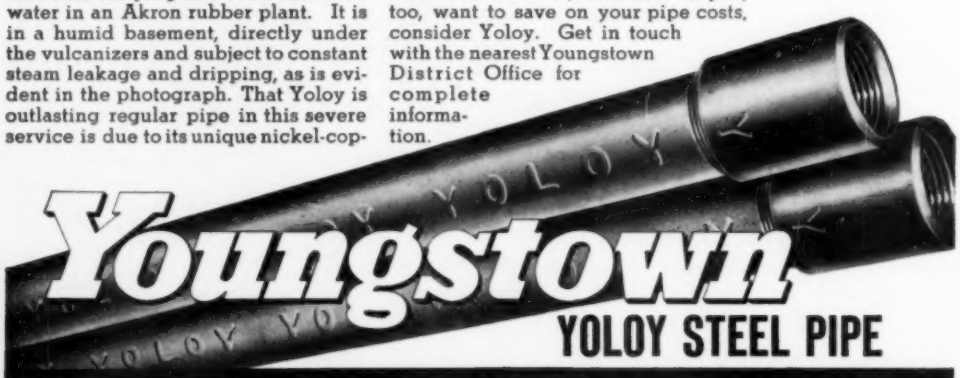

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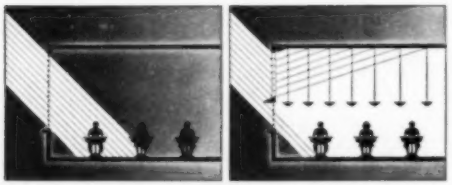

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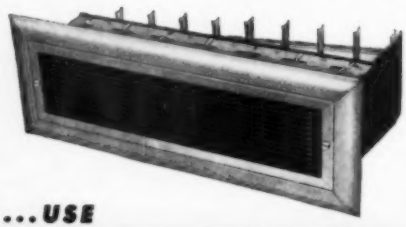

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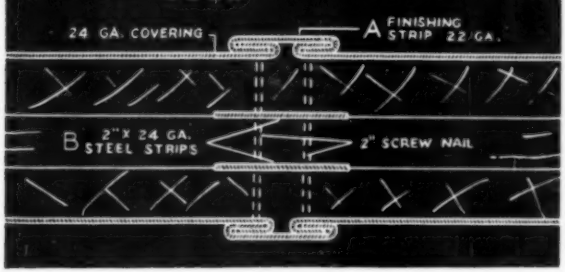

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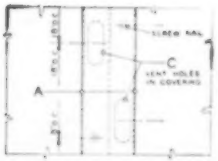

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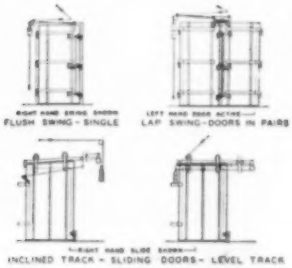

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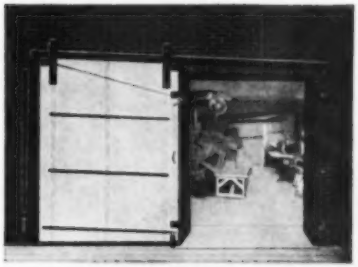

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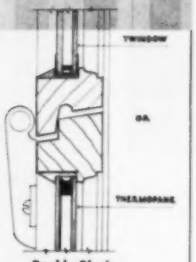

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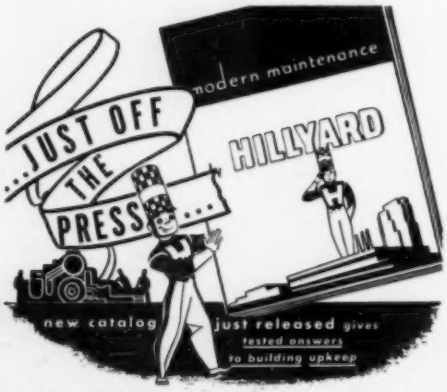

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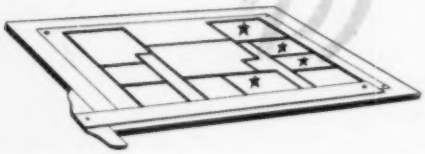

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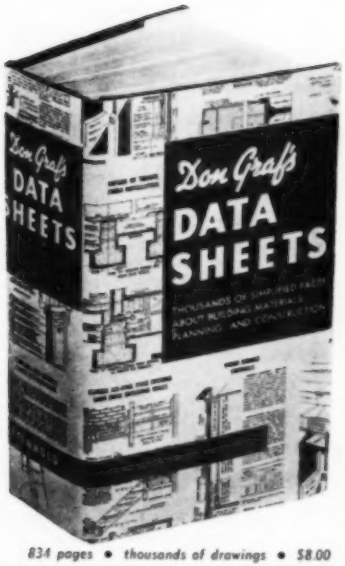

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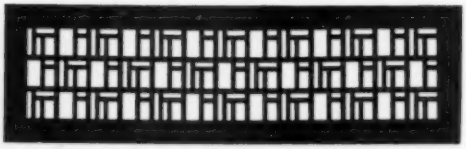

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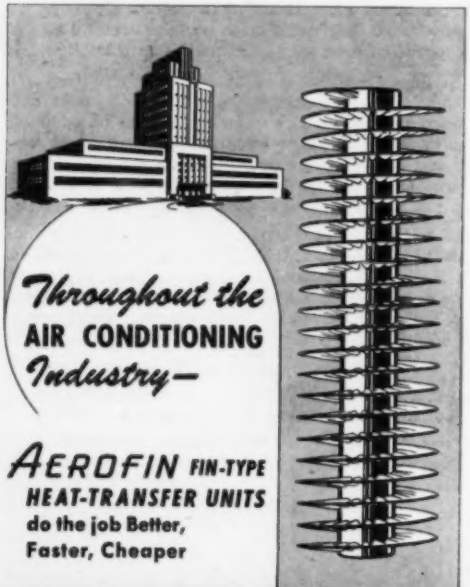

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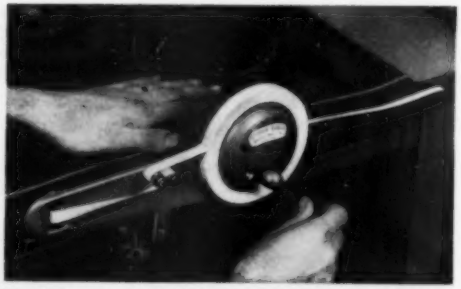

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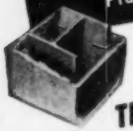

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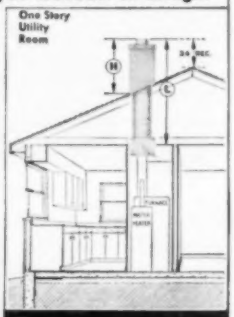

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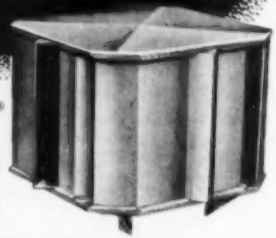

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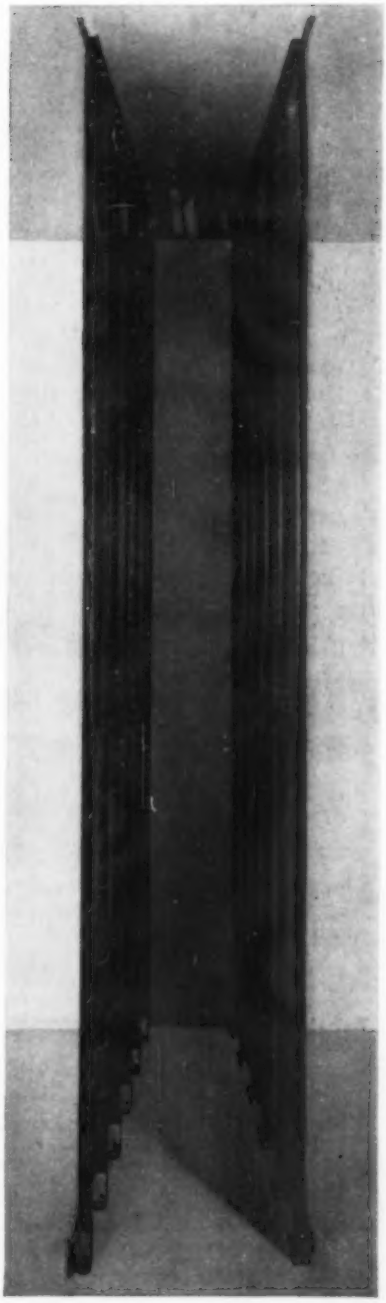

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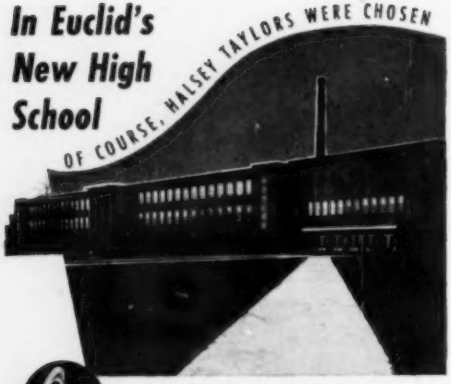

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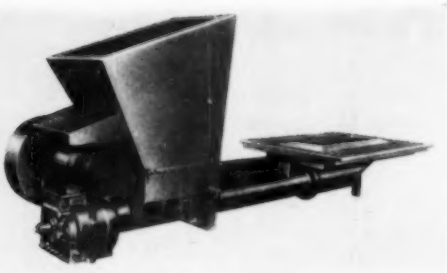

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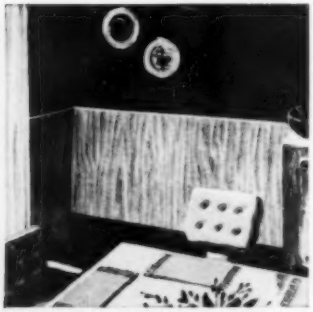

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6 SUGGESTIONS

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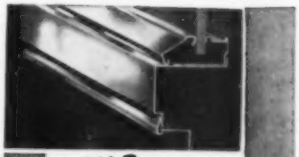

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P.S.

THE RECENT TRAGIC DEATH OF MATTHEW NOVICKI has saddened all of his friends, of whom there were many in this country. He was on a trip to India, with drawings of the new city that Mayer & Whittlesey are planning and on which Matthew was working with them, when the plane in which he was riding crashed in Egypt.

I met him first when he came to this country as Polish architectural representative on the U.N. design panel. In his usual modest way he and Mrs. Novicki stopped in the office one day, unannounced, to show us some drawings of the redesign of Warsaw—the beautiful, thin, expressive pen-line drawings that he did so well. His work with U.N. —as a member of the committee that was charged with selecting a site and then as an active worker on the design itself—was again modest, almost anonymous, and extremely effective. The other members of that extraordinary panel and the designers on the more permanent staff had great respect for his judgment and his ability.

When Henry Kamphoefner was farsighted enough to call him to North Carolina State as head of the architectural department, his influence was again immediately felt in that community—as a person, as a designer, and as a teacher. At the time of his death he was working on several important jobs with Bill Deitrick in Raleigh. His reputation and his contribution to architecture were constantly increasing.

Those who have heard him speak—he had done a good deal of lecturing recently—and those who had the privilege of private conversations with him, knew well his almost nervous, bubbling-over method of expression, as though there was not time to say everything that had to be said. There wasn't, unfortunately. His career was just developing, and there were many more things for him to draw and for him to say.

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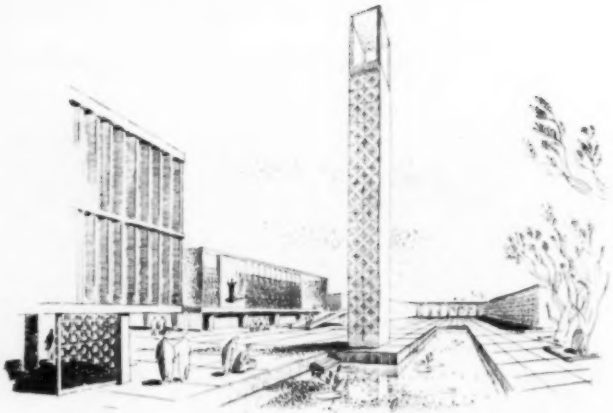
HOW DO ARCHITECTS GET SELECTED when they do not actively solicit work? We published some statistics on this recently, but case histories are always more interesting than cold figures. We asked the Drake University people how they had happened to choose the Saarinen firm, and we got a very frank answer. As in most such instances the president of the university, the board of trustees, and the faculty—who had been considering the construction of two buildings for some time—were thinking first in terms of more conventional design. At about the same time the president, Dr. Harmon, and a member of the board separately became interested in work the Saarinens had done, and so Dr. Harmon paid a visit to Cranbrook. There he was impressed with the possibility of a truly modern university environment, and was thoroughly sold on the economical and flexible use of space which the Saarinen firm translated into such beautiful architecture. The other members of the board were convinced by the enthusiasm of their president and by a showing of the sketches of the Des Moines Art Center, on which the Saarinens were working at the time.

Now Drake is so completely enthusiastic about the two completed buildings which we publish this month that the firm has been engaged to design the entire campus of the future, which will be constructed in stages as funds become available.



Drawing by Matthew Novicki of an early study for proposed civic center, Punjab, India.

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SOCIAL NOTES: Recent visitors to New York have included such disparate characters from California as Mendelsohn, Kump, Campbell & Wong. Henry Kamphoefner has been in town from North Carolina, Herb Swinburne from Philadelphia, Serge Chermayeff from Chicago. Le Corbusier stopped through on his way to South America, and from England, Frankland Dark has been visiting these shores.

The Carl Feisses are happily installed in a Victorian house in Georgetown, certainly the pleasantest place to live in Washington, Sam Zissman of San Antonio has been their house guest while he acts as consultant to FFHA. Sam prepares a mean Mexican dinner—out of cans.

Ernie Kump's trip east was on the way to Europe, to attend the meeting of the International Union of Architects. Mrs. K. and one child accompanied him to New York, then had to go back home.

Norman M. Crieghton

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